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Aval Proving Ground, Dahlgren, Va. (NPG Report No. 934)

enth Partial Report on Anti-Submarine Rocket Fuze Systems - Research,
Development Tests and Reports of - Final Report on Rocket Fuze Mk 166,
Comparison of Firing Pin Springs - and Appendixes A thru D

orff, F. W. 6 March '52 68pp. tables, drwg

s, Rocket
ets, Underwater

Ordnance and Armament (22)
Rockets and Launchers (10)

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Rocket Fuze Mk 166, Comparison of Firing Pin Springs

PART A

SYNOPSIS

1. The Bureau of Ordnance plans to resume the production of the mechanical type Mk 166 anti-submarine rocket base fuze. Recont experience in the development of experimental fuzes has indicated that a new type of spring, produced by the Hunter Spring Co., may be more uniform in its characteristics, have better resistance to heavy plate impacts and in general be more satisfactory as a firing pin spring than those previously specified for mechanical type rocket fuzes. It was therefore deemed advisable to conduct a performance test of fuzes incorporating this new type of spring to determine whether the firing pin spring specifications should be changed for the new production.
2. This test was conducted to determine whether Mk 166 rocket fuzes will provide more consistent functioning on heavy plate impacts when assembled with the new type of firing pin spring than when assembled with the present standard type of spring.
3. It is concluded that:
 - a. Little difference in effectiveness of performance could be noted upon changing the firing pin spring in the Mk 166 rocket fuze. Both the special and standard springs appeared to provide satisfactory functioning under the conditions of the test.
 - b. The Mk 166 fuze will probably fire after heavy target impact even though only partially armed.
 - c. Mk 166 fuze bodies will remain in effective condition when subjected to impacts on armor plate targets up to and including 2" in thickness.

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Rocket Fuze Mk 166, Comparison of Firing Pin Springs

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Rocket Fuze Mk 166, Comparison of Firing Pin Springs

PART BINTRODUCTION

1. AUTHORITY:

This test was conducted in accordance with reference (a) under Task Assignment NPG-Re2b-12-1-52 assigned by reference (b).

2. REFERENCES:

- a. NOL Conf ltr TF:HLD, NP/NOL/XI-1(756) Ser 01209 of 9 July 1951
- b. BUORD ltr NP9(Re2b-D.B.LaP:bjn) Ser 23938 of 4 August 1951

3. BACKGROUND:

The Bureau of Ordnance plans to resume the production of the mechanical type Mk 166 anti-submarine rocket base fuze. Recent experience in the development of experimental fuzes has indicated that a new type of spring, produced by the Hunter Spring Co., may be more uniform in its characteristics, have better resistance to heavy plate impacts and in general be more satisfactory as a firing pin spring than those previously specified for mechanical type rocket fuzes. It was therefore deemed advisable to conduct a performance test of fuzes incorporating this new type of spring to determine whether the firing pin spring specifications should be changed for the new production.

4. OBJECT OF TEST:

To determine whether Mk 166 rocket fuzes will function better on heavy plate impacts when assembled with a special, new type of firing pin spring than they will when assembled with their standard type of spring.

Rocket Fuze Mk 166, Comparison of Firing Pin Springs

5. PERIOD OF TEST:

a. Date Project Letter	9 July 1951
b. Date Necessary Material Received	10 September 1951
c. Date Commenced Test	12 September 1951
d. Test Completed	3 November 1951
e. Preliminary Report Submitted	27 November 1951

6. REPRESENTATIVES PRESENT:

R. J. Happick	Naval Ordnance Laboratory
L. J. DeSable	Naval Ordnance Laboratory
R. S. March	Naval Ordnance Laboratory

PART CDETAILS OF TEST

7. DESCRIPTION OF ITEM UNDER TEST:

a. The Mk 166 Mod 0 fuze is shown in detail in Figure 1. This fuze is primarily to be used in rockets fired from aircraft against submarines, is designed so that it will not detonate immediately after impact with water, and is labeled as "Deceleration Discriminating (DDR)". If the round misses its target, the fuze fires after approximately 100 feet of under-water travel. If it strikes the hull it does not detonate until after it has completed its penetration.

b. While deceleration of the round is high (in passage through the water or during penetration of the target) the inertia of the trigger block keeps the trigger spring compressed. When deceleration is reduced, below a value determined by trigger spring strength and friction, the spring forces the trigger block to the rear and releases the firing pin lock balls. The firing pin spring then drives the firing pin into the primer and initiates the detonation.

c. The firing-pin spring is thus under compression during the impact, resulting in a loss of spring strength which may affect the initiation of the primer.

Rocket Fuze Mk 166, Comparison of Firing Pin Springs

8. DESCRIPTION OF TEST EQUIPMENT:

Test Vehicle	5"0 rocket head Mk 2 Mod 2, inert loaded
Propulsion	Two 5"0 HVAR motors in tandem
Launcher	Naval Proving Ground 1050 ft.
Targets	1-1/2", 2", and 2-1/2" STS armor plate

9. PROCEDURE:

a. The fuzes were assembled at the Naval Ordnance Plant, Macon, Georgia and installed in 5"0 rocket heads Mk 2 Mod 2 inert loaded at the Naval Proving Ground. The heads were assembled to 5"0 HVAR motors. A 5"0 HVAR motor was used as a booster for the first 200 ft. of travel on the 1050 ft. launcher. Heavy target plates were placed in a butt 285 ft. from the muzzle of the launcher. Rounds were recovered in a sandpile whose face was 5 ft. behind the target. Velocities were measured immediately before the target through the use of a Potter counter chronograph.

b. After recovery the rocket heads were returned to the Naval Ordnance Laboratory, where the fuzes were cut out of the heads, broken down and examined.

10. RESULTS AND DISCUSSION:

a. Tables I and II, Appendix (A), summarize the information obtained from the examination of the recovered fuzes at the Naval Ordnance Laboratory. Details of the impact conditions are contained in the Impact Records, Appendix (B).

b. All 29 fuzes recovered with special firing-pin springs had fired. However 7 were only partially armed, one having as little as 20° rotation of the detonator plunger, thus indicating that all fuzes had not had sufficient time to arm in the limited range available to the target.

c. Twenty-two fuzes with standard firing pin springs were recovered. Twenty had fired although 8 were only partially armed; 4 having as little as 10 to 15 degrees rotation of the plunger. Of the two not firing one was only 30° armed and the other plunger had not rotated at all; although the shear wire through the arming sleeve had broken. Both failures occurred on the lightest target; 1-1/2" plate at 30° obliquity.

Rocket Fuze Mk 166, Comparison of Firing Pin Springs

d. Seven fuze bodies out of 16 tested against 2-1/2" STS plate broke through the body threads.

PART DCONCLUSIONS

11. It is concluded that:

- a. Little difference in effectiveness of performance could be noted upon changing the firing-pin spring in the Mk 166 rocket fuze. Both the special and standard springs appeared to provide satisfactory functioning under the conditions of the test.
- b. The Mk 166 fuze will probably fire after heavy target impact even though only partially armed.
- c. Mk 166 fuze bodies will remain in effective condition when subjected to impacts on armor plate targets up to and including 2" in thickness.

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Rocket Fuze Mk 166, Comparison of Firing Pin Springs

The tests upon which this report is based were conducted by:

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NPG REPORT NO. 934

U. S. NAVAL PROVING GROUND
DAHLGREN, VIRGINIA

Nineteenth Partial Report

on

Anti-Submarine Rocket Fuze Systems;
research, development, tests and reports of

Final Report

on

Rocket Fuze Mk 166, Comparison of Firing Pin Springs

Task Assignment: NPG-Re2b-12-1-52
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Rocket Fuze Mk 166, Comparison of Firing Pin Springs

TABLE I
SUMMARY OF RESULTS

SPECIAL FIRING PIN SPRINGS

<u>Impact No.</u>	<u>Fuze No.</u>	<u>Target Obl.-Deg. Thickness-ins.</u>	<u>Fired</u>	<u>Armed</u>	<u>Closing Cup</u>	<u>Fuze Body</u>	<u>Remarks *</u>
39226	1	0° 2-1/2	Yes	Partially 80°	Hand tight	Base broken at threads	F.P. rusted; slightly marked
39228	2	0° 2-1/2	Yes	Partially 75°	Tight, cracked	OK	F.P. badly marked
39230	3	0° 2-1/2	Yes	Yes	Tight	Base broken at threads	F.P. badly marked
39232	4	0° 2-1/2	Yes	Yes	Hand tight	Base out of round	Keyhole, F.P., badly marked
39242	5	0° 2-1/2	Yes	Yes	Tight, center mashed	Base broken at threads	F.P. badly marked
39244	6	0° 2-1/2	Yes	Yes	Hand tight	OK	F.P. marked
39246	7	0° 2-1/2	Yes	No	Loose in booster cup	OK	F.P. slightly marked
39248	8	0° 2-1/2	Yes	Yes	Hand tight	Broken in threads	F.P. badly marked

* F.P. = Firing Pin

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Rocket Fuze Mk 166, Comparison of Firing Pin Springs

TABLE I (Cont'd.)

<u>Impact No.</u>	<u>Fuze No.</u>	<u>Target Condition</u>	<u>Obl.-Deg. Thickness-ins.</u>	<u>Fired</u>	<u>Armed</u>	<u>Closing Cup</u>	<u>Fuze Body</u>	<u>Remarks *</u>
39250	9	0°	2-1/2	Yes	Yes	Hand tight	OK	F.P. badly marked
39268	10	30° 2		Yes	Partially 75°	Hand tight	OK	F.P. unmarked
39270	11	30° 2	30° 30°	Yes	Yes	Hand tight	OK	F.P. badly marked
39272	12	30° 2		Yes	Partially 75°	Hand tight	OK	Slightly marked
39274	13	30° 2		Yes	Partially 65°	Tight, but threads sheared	OK	F.P. badly marked
39276	14	30° 2		Yes	Yes	Hand tight	OK	F.P. badly marked
39278	15	30° 2		Yes	Yes	Hand tight	OK	F.P. badly marked
39280	16	30° 2		Yes	Yes	Hand tight	OK	F.P. badly marked
39282	17	30° 2		Yes	Yes	Hand tight	OK	F.P. badly marked
39283	18	30° 2		Yes	Yes	Hand tight	OK	F.P. badly marked

* F.P. = Firing Pin

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Rocket Fuze Mk 166, Comparison of Firing Pin Springs

TABLE I (Cont'd)

<u>Impact No.</u>	<u>Fuze No.</u>	<u>Target Condition</u>	<u>Obl. Deg.</u>	<u>Thickness-ins.</u>	<u>Fired</u>	<u>Armed</u>	<u>Closing Cup</u>	<u>Fuze Body</u>	<u>Remarks *</u>
39284	19	30° 2	30°	Yes	Yes	Hand tight	OK	OK	F.P. badly marked
39299	20	30° 1-1/2	30°	Yes	Yes	Hand tight	OK	OK	Keyhole, F.P. badly marked
39301	21	30° 1-1/2	30°	Yes	Yes	Hand tight	OK	OK	F.P. badly marked
39304	22	30° 1-1/2	30°	Yes	Yes	Hand tight	OK	OK	F.P. badly marked
39306	23	30° 1-1/2	30°	Yes	Yes	Hand tight	OK	OK	F.P. not marked
39309	24	30° 1-1/2	30°	Yes	Yes	Hand tight	OK	OK	F.P. slightly marked
39311	25	30° 1-1/2	30°	Yes	60°	" Hand tight	OK	OK	F.P. unmarked
39313	26	30° 1-1/2	30°	Yes	Yes	Hand tight	OK	OK	F.P. marked
-	27	Not shipped from Macon	-	-	-	-	-	-	-
39315	28	30° 1-1/2	30°	Yes	Partially 20°	Hand tight	OK	OK	F.P. slightly marked

* F.P. = Firing Pin

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Rocket Fuze Mk 166, Comparison of Firing Pin Springs

TABLE I (Cont'd)

<u>Impact No.</u>	<u>Fuze No.</u>	<u>Target Condition Obl.-Deg. Thickness-ins.</u>	<u>Fired</u>	<u>Armed</u>	<u>Closing Cup</u>	<u>Fuze Body</u>	<u>Remarks *</u>
39317	29	30° 1-1/2	Yes	Yes	Hand tight	OK	F.P. marked
39318	30	30° 1-1/2	Yes	Yes	Hand tight	OK	F.P. badly marked

* F.P. = Firing Pin

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TABLE II (Cont'd)

<u>Impact No.</u>	<u>Fuze No.</u>	<u>Target Condition Oblique-Deg. Thickness-ins.</u>	<u>Fired</u>	<u>Armed</u>	<u>Closing Cup</u>	<u>Fuze Body</u>	<u>Remarks *</u>
39269	40	29° 2	Yes	Yes	Hand tight	OK	F.P. badly marked
39271	41	30° 2	Yes	Yes	Hand tight	OK	F.P. marked
39273	42	30° 2	Yes	Yes	Hand tight	OK	F.P. appears marked by retaining ball
39275	43	30° 2	Yes	Yes	Hand tight	OK	F.P. slightly marked
39277	44	30° 2	Yes	Partial 24° Armed	Hand tight	OK	F.P. not marked
39279	45	30° 2	Yes	Yes	Hand tight	OK	F.P. badly marked
39281	46	30° 2		Not recovered	-	-	Keyhole
39298	47	30° 1-1/2	Yes	Yes	Tight	-	F.P. slightly marked
39300	48	30° 1-1/2	Yes	Yes	Hand tight	OK	F.P. slightly marked
39302	49	30° 1-1/2		Not recovered	-	-	"
39305	50	30° 1-1/2	Yes	45°	Hand tight	OK	F.P. marked

* F.P. = Firing Pin

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Rocket Fuze Mk 166, Comparison of Firing Pin Springs

TABLE II (Cont'd.)

Impact No.	Fuze No.	Target Condition		Armed	Closng Cup	Fuze Body	Remarks *
		Obl.-Deg.	Thickness-ins.				
39308	51	30° 1-1/2	No	30°	Hand tight	OK	Fired in vise F.P. unmarked
39310	52	30° 1-1/2	Yes	15°	Hand tight	OK	Slightly marked
39312	53	30° 1-1/2	Yes	15°	Hand tight	OK	Slightly marked
39314	54	30° 1-1/2	Yes	75°	Hand tight	OK	F.P. slightly marked
39316	55	30° 1-1/2	No	No. Shear Wire Sheared	Hand tight	OK	F.P. slightly marked

* F.P. = Firing Pin

IMPACT RECORD

U. S. NAVAL PROVING GROUND
DAHLGREN, VIRGINIAIMPACT NO. 39326IMPACT DATE 9-12-51NPG TEST NO. CDF 1070OBJECT IMPACT TEST FOR COMPLETENESS OF FILING FINReference: NPG ltr. Task Assignment No. 1-12-51 dated 9 Jul 1951Reference: Board for NOL NP/NOL/X-1(756) 50-0120 dated 9 Jul 1951Task Assignment No. NPG-R226-12-1-52 dated 4 Aug 1951

PLATE TARGET

Gage 2.50 Class STSMaker JARRELLSNo. 222394 Group -Dimensions 170" X 240"OBLIQUITY 60°PENETRATION COMPLETEThickness at impact .55No. of impact on plate 5Dist. from nearest impact 41"Dist. from near edges L-10" and R-10"Impact area 6" X 6"Spall: Front 0 Back 0Dish 1/4" Spur 2"Cracks 6Punching (thrown) (started)Back Button (thrown) (started)Bulge 0Through opening 5" X 5"

ROCKET

HEAD: Cal. 5" Type SENNA ARMark 9 Mod 2 No. 954 Wt. 48.0 lb.Maker ESCI L. ECLot No. 38Filler: Type VERM Wt. -Fuzes INK. 107-4 LOT 8-51 #1SPECIAL FIRING FIN 2.5" X 2.5"Boosters NoneWt. of head (as fired) 48.0 lb.MOTOR: Cal. 5" Mk. 10 Mod 4Motor temp. 120° Wt. 81.95#COMPLETE ROUND: Mark ModWt. (as fired) 12.5 95 lb.Wt. (burned) -OTHER INFORMATION MOTOPS (1.146-21) SPAINAIN: B716-315-H-50" A7009-212-H-50LAUNCHER 1050' DODGET THIN * 1.0

ROCKET PERFORMANCE

Flight Velocity, f/s: Striking 1819 Residual -Fuze functioning -Explosive action (High Order) (Low Order) (None)Distance of burst behind plate -Condition of recovered round intact

Head was in (EFFECTIVE) (INEFFECTIVE) condition.

REMARKS: Head to face return 1.1 NOL.

Photo No. _____

Signed F.W. Kunkel /
F.W. RAEBER, Lt.
G.P. Lyle, Jr. Engr.

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Part A-1-2-4-1

IMPACT RECORD

U. S. NAVAL PROVING GROUND
DAHLGREN, VIRGINIAIMPACT NO. 39324IMPACT DATE 9-12-51NPG TEST NO. CODE 1643OBJECT IMPACT TEST FOR COMPARISON OF FIRING 166
SPONGES IN MI. 166 ROCKET HEADS IN 5" ROCKET HEADReference: NPG 1643 dated 9 Jun 1951
Reference: Buord ltr. No. NP/1643/1(1956)1, clodated 9 Jun 1951
Task Assignment No. NPG-L-1643-12-1-52 dated 11 Jun 1951PLATE TARGETGage 2.50 Class STE
Maker CHIHLISIE
No. 32294 Group -
Dimensions 120" X 240"OBLIQUITY 0°PENETRATION COMPLETEThickness at Impact .55No. of impact on plate 6Dist. from nearest impact .25"Dist. from near edge .76" and E-10"Impact area 6" X .6"Spall: Front 6 Back 6Dish 1/4" Spur 9"Cracks 0Punching (thrown) (started) 0Back Button (thrown) (started) 0Bulge 0Through opening .5" X .5"ROCKETHEAD: Cal. 5" Type SEMI-AF
Mark 1 Mod No 8371 Wt. 47.00#
Maker ASCH T. .30
Lot No. 38
Filler: Type VERM. Wt. -
Fuzes MK 166-0 LOT 8-51 #31
STANDARD FIRING LINE 50.00#
Boosters inc't - live primers
Wt. of head (as fired) 47.00#MOTOR: Cal. 5" Mk. 1 Mod 4
Motor temp. 120° Wt. 90.65#COMPLETE ROUND: Mark Mod
Wt. (as fired) 138.65#
Wt. (burned) -OTHER INFORMATION MOTORS (2) 115 CX-0
ALN: RTA PA. EXP. H-50
FIREST-317-H-50
LAUNCHER 1050' ROCKET LAUNCHER

ROCKET PERFORMANCE

Flight Velocity, f/s: striking 1726 Residual -
Fuze functioning 1
Explosive action (High Order) (Low Order) (None)
Distance of burst behind plate 0
Condition of recovered round INTACT
Head was in (EFFECTIVE) (INEFFECTIVE) condition EFFECTIVEREMARKS: Not + face is turned to NOPhoto No. -Signed F. C. R. Ladd
F. C. R. Ladd
CHIEF ENGINEER

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47-118 #6

IMPACT RECORD

U. S. NAVAL PROVING GROUND
DAHLGREN, VIRGINIA

IMPACT N. 34328

IMPACT DATE 9-12-51

NPG TEST N. CODE 10103

OBJECT IMPACT TEST FOR COMBINATION OF FIRING PIN
 CLIPES IN MK 166 ROCKET FUZES IN 5" ROCKET HEAD

Reference: NPG TIR. Report 7-4 4-4 dated _____
 Reference: ~~Report~~ NO. 8th NP/NCL/XI-1 (756) dated 6-20-51
 Task Assignment N. NPG-Re 26-12-1-52 dated 14 Aug 1951

PLATE TARGET

Gage 2.50 Class STS
 Maker CARNEGIE
 No. 32244 Group -
 Dimensions 120" X 240"

OBLIQUITY 0°

PENETRATION COMPLETE
 Thickness at impact 2.55
 No. of impact on plate 7
 Dist. from nearest impact 12"
 Dist. from near edge 69" and R-79"
 Impact area 6" X 6"
 Spall: Front 0 Back 0
 Dish 1/4" Spur 1"
 Cracks 0
 Punching (thrown) (started)
 Back Button (thrown) (started)
 Bulge 0
 Through opening 5" X 5"

ROCKET

HEAD: Cal. 5" Type E7III-AP.
 Mark 2 Mod 2 No 8963 Wt. 48.00 #
 Maker USA
 Lot No. 22
 Filler: Type LEATH. Wt. -
 Fuze MK 166-A LOT 8-51 #2
 SPECIAL FIRING PIN SEE 10
 Boosters inert - live primers
 Wt. of head (as fired) 48.00 #

MOTOR: Cal. 5" Mk. 10 Mod 4
 Motor temp. 120° RT. 90.00 #

COMPLETE ROUND: Mark Mod
 Wt. (as fired) 128.00 #
 Wt. (burned) -

OTHER INFORMATION METOL 6 GRAIN
 HLN: A112A-315-H-50
 " K112A-317-H-50
 LAUNCHER 1550' KICKET 14.25 ft.

ROCKET PERFORMANCE

Flight Velocity, f/s: striking 1730 Residual -
 Fuze functioning
 Explosive action (High Order) (Low Order) (None)
 Distance of burst behind plate -
 Condition of recovered round intact
 Head was in (EFFECTIVE) (INDEFFECTIVE) condition

REMARKS: Head & fuze returned to N.P.

Photo No. _____

Signed F. W. Kastor
 F. W. KASTOR 8-51
 ORP. E7III-AP-12

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Impact Record # 3

IMPACT RECORD

U. S. NAVAL PROVING GROUND
DAHLGREN, VIRGINIAIMPACT NO. 39224IMPACT DATE 9-12-51NPG TEST NO. CODE 10903OBJECT IMPACT TEST FOR COMPARISON OF FIRING FIVE
SALVOR 5 IN MK 166 ROCKET FUZES IN 5" ROCKET HEADSReference: NPG 10903 dated July 11, 1951Reference: Board 10903 dated July 11, 1951Task Assignment No. NPG-R-28-12-1-52 dated 4 August 1951PLATE TARGETGage 2.50 Class STS
Maker SAJILL No. 32344 Group -
Dimensions 120" X 24"OBLIQUITY 11PENETRATION COMPLETE
Thickness at impact 2.55
No. of impact on plate 8
Dist. from nearest impact 16"
Dist. from near edges 7.3" and 1-87"
Impact area 6" X 6"
Spall: Front 0 Back 0
Dish 1/4" Spur 2"
Cracks 0
Punching (thrown) (started)
Back Button (thrown) (started)
Bulge 0
Through opening 5" X 5"ROCKETHEAD: Cal. 5" Type SEDU-AP
Mark 2 Mod 2 No 8931 Wt. 49.61#
Maker OSCH Lot No. 38
Filler: Type VIRGIN Wt. -
Fuzes Mk 166-C lot 2-51 #33
STANDARD TAILING FIN SET 11A
Boosters inert - live primers
Wt. of head (as fired) 48.60#MOTOR: Cal. 5" Mk. 10 Mod 4
Motor temp. 132° RT 87.8#COMPLETE ROUND: Mark Mod
Wt. (as fired) 135.85#
Wt. (burned) -OTHER INFORMATION GRAIN
ALIN 1111A-315-H-50
" 1111A-317-H-50
LAUNCHER 1050' ROCKET LAUNCHER

ROCKET PERFORMANCE

Flight Velocity, f/s: 1840 Residual -
Fuze functioning DEAD
Explosive action (High Order) (Low Order) (None)
Distance of burst behind plate -
Condition of recovered round WELL PRESERVED
Head was in (EFFECTIVE) (INEFFECTIVE) condition.

REMARKS: Head & fuze returned to AC.

Photo No. -Signed F.W. Kress
F.W. Kress
C.R. Elie, Eng-12

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- 4 - Print Name & # 4

IMPACT RECORD

U. S. NAVAL PROVING GROUND
DAHLGREN, VIRGINIAIMPACT NO. 37230IMPACT DATE 9-12-51NPG TEST NO. CODE 10705OBJECT IMPACT TEST FOR COMPARISON OF FIRING PIN SPRINGS IN MK 166 ROCKET FUZES IN 5" ROCKET HEADSReference: NPG Ref. Report 714 9-3-54 dated July 1954
Reference: Board Ref. NOL Test NPG/NOL/XI-1(756) Envirod dated 7 July 1951
Task Assignment No. NPG-Ref 28-12-1-52 dated 4 August 1951PLATE TARGETGage .50 Class STS
Maker CARNEGIE
No. 32294 Group -
Dimensions 120" X 240"OBLIQUITY 6°PENETRATION COMPLETE
Thickness at impact 2.55
No. of impact on plate 9
Dist. from nearest impact 12"
Dist. from near edges .63" and .43"
Impact area 6" X 8"
Spall: Front 0 Back 0
Dish 1/4" Spur 2"
Cracks 2
Punching (thrown) (started)
Back Button (thrown) (started)
Bulge 0
Through opening 5" X 6-3/4"ROCKETHEAD: Cal. 5" Type 5-7M1-AP
Mark 2 Mod 2 No 8965 Wt. 48.00#
Maker CSA = .30
Lot No. 38
Filler: Type VERMI. Wt. -
Fuzes MK 166-0 LOT 8-51 #9
SPECIAL FIRING PIN SPRING
Boosters None five pushpins
Wt. of head (as fired) 48.00#MOTOR: Cal. 5" Mk. 10 Mod 4
Motor temp. 130° INT. 75.4°CCOMPLETE ROUND: Mark Mod
Wt. (as fired) 136.40#
Wt. (burned) -OTHER INFORMATION Nitrocell 60%
ALN: AMDA-312-4-50
AMDA-317-4-50
LAUNCHER 1050' KINETIC LAUNCHER

ROCKET PERFORMANCE

Flight MEAN Velocity, f/s: striking 1891 Residual -
Fuze functioning -
Explosive action (High Order) (Low Order) (None)
Distance of burst behind plate -
Condition of recovered round intact
Head was in (EFFECTIVE) (INEFFECTIVE) conditionREMARKS: Head + fuze returned to HQ.Photo No. _____ Signed F.W. Johnson
F.W. Johnson
10-12-51

CONFIDENTIAL

Impact Record 115

IMPACT RECORD

U. S. NAVAL PROVING GROUND
DAHLGREN, VIRGINIA

IMPACT NO. 39531

IMPACT DATE 9-12-51

NPG TEST NO. CODE 1C903

OBJECT IMPACT TEST FOR COMPARISON OF FIFTH FLA
SHELLS IN MK 16 ROCKET FUZES IN 5" ROCKET SHELLS

Reference: NPG ltr. dated 7-14-51
 Reference: BuOrd ltr. NO. 104 NP/NCL XI-1(75a) Sur. 0120 dated 9 July 1951
 Task Assignment No. NEG-Ref 24-12-1-52 dated 4 July 1951

PLATE TARGET

Gage 2.5 Class II S
 Maker CHENEGIE
 No. 72294 Group -
 Dimensions 120" X 40"

OBLIQUITY CO

PENETRATION 307.81 FT

Thickness at Impact 2.55

No. of impact on plate 10

Dist. from nearest impact 7"

Dist. from near edges 1.63" and 8.77"

Impact area 6" X 6"

Spall: Front 0 Back 0

Dish 1/4" Spur 1"

Cracks 0

Punching (thrown) (started)

Back Button (thrown) (started)

Bulge 0

Through opening 5" X 5"

ROCKET

HEAD: Cal. 5" Type 527-41
 Mark 2 Mod 3 No 8966 Wt. 48.15 lb
 Maker CHENEGIE Lot No. E-31
 Filler: Type PERM. Wt. -
 Fuze MK 166-A LOT E-51 E-33
 STANDARD FUSE LIFE 30 & 15 sec.
 Boosters inert - live primers
 Wt. of head (as fired) 48.06 lb

MOTOR: Cal. 5" Mk. 1G Mod 4
 Motor temp. RT. 87.65°

COMPLETE ROUND: Mark Mod
 Wt. (as fired) 125.66 lb
 Wt. (burned) -

OTHER INFORMATION Motor C-2 No 1256
 Fuz: MK 166-A 215-H-50
 LAUNCHER 1650' FEET. Elevation 11°

ROCKET PERFORMANCE

Flight Velocity, ft/s: striking 1750 Residual -
 Fuze functioning
 Explosive action (High Order) (Low Order) (None)
 Distance of burst behind plate
 Condition of recovered round Head was in (EFFECTIVE) (INOPERATIVE) (NOT IN)

REMARKS: Head & base returned to lab.

Photo No. _____

Signed F.W.Kadlec

Date 10-12-51

CONFIDENTIAL
 Security classification: CONFIDENTIAL File # 6

IMPACT RECORD

U. S. NAVAL PROVING GROUND
DAHLGREN, VIRGINIA

IMPACT NO. 39232

IMPACT DATE 9-12-51

NPG TEST NO. CURE 1963

OBJECT TEST FOR PENETRATION OF PLATE TARGET
SPRING 14 INCH 166 ROCKET FIRED TO 5" DIRECT HIT

Reference: NPG Test No. 39232 dated 9-12-51

Reference: Board Itr. NOL Itr. NP/NOL XI-1 (156) dated 9 July 1951

Task Assignment No. NPG-Ref 16-12-1-52 dated 4 August 1951

PLATE TARGET

Gage 2.50 Class 375

Maker AERONCA

No. 32294

Dimensions 120" X 240"

OBLIQUITY 0°

PENETRATION COMPLETED

Thickness at impact 2.55

No. of impact on plate 11

Dist. from nearest impact 4"

Dist. from near edges 165" and R-92"

Impact area 6" X 8"

Spall: Front 0 Back 1

Dish 1/4" Spur 2"

Cracks

Punching (thrown) (started)

Back Button (thrown) (started)

Bulge

Through opening Frequent

ROCKET

HEAD: Cal. 5" Type 5214PD

Mark 1 Mod 2 No 8513 Wt. 48.16#

Maker AERONCA

Lot No. 39

Filler: Type FEGE Wt. -

Fuzes M8 36-2 LAT 4-51 #4

SPECIAL FIRING 2100 500 1180

Boosters inst - live primus

Wt. of head (as fired) 48.16#

MOTOR: Cal. 5" Mk. 10 Mod 4

Motor temp. 120° Wt. 48.65#

COMPLETE ROUND: Mark Mod

Wt. (as fired) 136.65#

Wt. (burned)

OTHER INFORMATION MOTORS(2) 1-2-1-1

AIA: 11114-315-11-50

TIMEPA-211-11-50

LAUNCHER 1050 PAPER LAET-11

ROCKET PERFORMANCE

Flight Velocity, f/s: Striking 1766 Residual -

Fuze functioning

Explosive action (High Order) (Low Order) (None)

Distance of burst behind plate

Condition of recovered round

Head was in (EFFECTIVE) (INEFFECTIVE) condition.

REMARKS: This round keyholed as fusion impact

Head & fins returned to NPG

Photo No. _____

Signed F.W. Paschal
FIRE RASFOR 8-1-51
CIB 516-50-1CONFIDENTIAL
Security Classification

is part of Record #?

IMPACT RECORD

U. S. NAVAL PROVING GROUND
DAHLGREN, VIRGINIAIMPACT NO. 34233IMPACT DATE 9-12-51NPG TEST NO. CODE 10903OBJECT IMPACT TEST FOR COMPARISON OF FIRING PINSTRINGS IN MK 166 KICKET FUZES IN 5" KICKET HEADS

Reference: NPG TIP Report No. 934

dated

Reference: Board of Test NPDOL X1-1(756) dated

9 July 1951

Task Assignment No. NPG-Re.26-12-1-52dated 4 August 1951

PLATE TARGET

Gage 2.50 Class STSMaker CASEY & CO.No. 32294 Group -Dimensions 120" X 240"OBLIQUITY 0°PENETRATION COMPLETEThickness at impact 2.55No. of impact on plate 12Dist. from nearest impact 16"Dist. from near edges .50" and R-66Impact area 6" X 6"Spall: Front 0 Back 0Dish 1/4" Spur 2"Cracks 0

Punching (thrown) (started)

Back Button (thrown) (started)

Bulge 0Through opening 5" X 5"

ROCKET

HEAD: Cal. 5" Type SEMI-APMark 9 Mod 2 No. 909 Wt. 48.00#Maker SEA # 30Lot No. 38Filler: Type VERM, Wt. -Fuzes MK 166-0 LOT 8-51 #34

STANDARD FIRING PIN SPRIN

Boosters intact = live primers

Wt. of head (as fired) 48.00#MOTOR: Cal. 5" Mk. 10 Mod 4Motor temp. 120° UT. 89.75#COMPLETE ROUND: Mark ModWt. (as fired) 137.75#Wt. (burned) -OTHER INFORMATION MOTOR'S (3) MK 166-0ALN: RMDA-315-H-50RMDA-317-H-50LAUNCHER 1650" KICKET LAUNCHER

ROCKET PERFORMANCE

Flight Velocity, f/s: striking 1722 Residual -

Fuze functioning

Explosive action (High Order) (Low Order) (None)

Distance of burst behind plate -

Condition of recovered round

Head was in (perfectly) (imperfectly) condition.

REMARKS: Not recoveredPhoto No. -Signed F. W. Kasdeff
F. W. KASDEFF, Jr., S.A.
CRD, ENG, 8-12

Impact Recd. #8

Impact Record
Impact Recd. #8

IMPACT RECORD

U. S. NAVAL PROVING GROUND IMPACT NO. 39242

DAHLGREN, VIRGINIA

IMPACT DATE 9-13-51NPG TEST NO. Code 10983OBJECT IMPACT TEST FOR COMPARISON OF FIRING PIN~~PLATES IN AIR LINE ROCKET FUZZES~~Reference: NPG ~~118~~ ~~118~~ datedReference: Boarder NOL ~~8th~~ NP/NGL/XI-1(756) datedTask Assignment No. NPG-RE28-12-1-52 dated9 Sept 19514 Oct 1951PLATE TARGETGage .5" Class 555Marker CANNIBALIZEDNo. 32294 Group -Dimensions 12.0" X 24.0"OBLIQUITY 0°PENETRATIONThickness at impact .55No. of impact on plate 1Dist. from nearest impact 17"Dist. from near edges .45" and .114"Impact area 6" X 6"Spall: Front C Back ADish 1/4" Spur 2"Cracks 0

Punching (thrown) (started)

Back Button (thrown) (started)

Bulge 0Through opening 5" X 5"ROCKETHEAD: Cal. .5" Type SE711-HFMark 2 Mod 2 No 3945 Wt. .15 lbMarker CANNIBALIZED F. .35Lot No. 38Filler: Type VER311 Wt. -Fuzes MK 16-6-6 LOT 8-51 #5SPECIAL FIRING PIN SE711-HFBoosters inert - live primersWt. of head (as fired) 48.00MOTOR: Cal. .5" Mk. 16 Mod 4Motor temp. 130° F. 89.05COMPLETE ROUND: Mark ModWt. (as fired) 136.15Wt. (burned) -OTHER INFORMATION MOTORS (2) 11K 16-6HN: 172-21-315-H-5ALAUNCHER 1050° F. RAKE LAUNCHER

ROCKET PERFORMANCE

Flight Velocity, f/s: 1150 striking 1951 Residual -Fuze functioning -

Explosive action (High Order) (Low Order) (None)

Distance of burst behind plate -Condition of recovered round intact

Head was in (EFFECTIVE) (INEFFECTIVE) condition.

REMARKS: Head & fuze returned to NOLPhoto No. - Signed F. W. KastorE. U. R. A. E. T. E. G. C. G.
C. F. E. E. G. C. G.CONFIDENTIAL
Security classification
Print No. 1 of 9

IMPACT RECORD

U. S. NAVAL PROVING GROUND
DAHLGREN, VIRGINIAIMPACT NO. 34243IMPACT DATE 9-13-51NPG TEST NO. C-61-16965OBJECT IMPACT TEST FOR COMPARISON OF F111A4 P14
SPRINGS IN NIK 166, ROCKET FUZESReference: NPG REF. NO. 104-4-1 dated 10-14-51
Reference: ~~Board of Ordnance~~ NPL NCL XI-1(75C) 1209 dated 10-14-1951
Task Assignment No. NPL-R-75-12-1-52 dated 14 August 1951

PLATE TARGET

Gage 2.50 Class STS
Maker CABINET
No. 22890 Group -
Dimensions 12" X 24"OBLIQUITY 60°PENETRATION COMPLETE
Thickness at impact 2.55
No. of impact on plate 14
Dist. from nearest impact 8"
Dist. from near edge 5.2" and 6.15"
Impact area 6" X 6"
Spall: Front C Back D
Dish 1/4" Spur 2"
Cracks C
Punching (thrown) (started)
Back Button (thrown) (started)
Bulge D
Through opening 5" X 5"

ROCKET

HEAD: Cal. 5" Type F111A4
Mark 2 Mod 2 No 8984 Wt. 48.00
Maker P.G.P. Lot No. 38 ± .30
Filler: Type VERM Wt. -
Fuzes Nik 166 I CT 8.51 #3
Standard Firing First Setting
Boosters inert - live primers
Wt. of head (as fired) 48.00MOTOR: Cal. 5" Mk. 10 Mod 4
Motor temp. 180° F.T. 90.05COMPLETE ROUND: Mark Mod
Wt. (as fired) 138.65 #
Wt. (burned) -OTHER INFORMATION DIALES: (2) G.P.M.
ADM: RD-12A-315-H-50
RD-12A-317-H-50
LAUNCHER 10.50' RAILKIT LAUNCHER

ROCKET PERFORMANCE

Flight MEAN Velocity, f/s: 1323 Residual -
Fuze functioning -
Explosive action (High Order) (Low Order) (None)
Distance of burst behind plate -
Condition of recovered round intact
Head was in (EFFECTIVE) (INEFFECTIVE) condition.REMARKS: Head & Fuze returned to NPLPhoto No. -Signed F.W. Gardner
F.W. FASLO 8-12
1611 E.P.O. 8-12

CONFIDENTIAL

Approved by Department of Defense Record # 21

IMPACT RECORD

U. S. NAVAL PROVING GROUND
DAHLGREN, VIRGINIA

IMPACT NO. 39244

IMPACT DATE 9-14-51

NPG TEST NO. CDF 10963

OBJECT IMPACT TEST FOR COMPARISON OF FIRING PIN
TECHNIQUES IN THE 166-0 SOCKET FUZES IN 5" ROCKET SHELLSReference: NPG ~~Re. 20-12-1-52~~ dated 9-14-51
Reference: Board ltr. NOL No. NP/NOL XI-1(756) dated 0120
Task Assignment No. NPG-Re. 20-12-1-52 dated 4 Aug 1951

PLATE TARGET

Gage 3" Class 575
Maker ~~NAKED~~
No. 39244 Group -
Dimensions 120" X 240"

OBLIQUITY 0°

PENETRATION COMPLETE

Thickness at impact 2.55

No. of impact on plate 15

Dist. from nearest impact 18"

Dist. from near edges 1-10" and 1-11"

Impact area 6" X 6"

Spall: Front 0 Back 6

Dish 1/4" Spur 1"

Cracks 0

Punching (thrown) (started)

Back Button (thrown) (started)

Bulge 0

Through opening 3" X 5"

ROCKET

HEAD: Cal. 5" Type 57M1-44
Mark 2 Mod 2 No 8995 Wt. 48.00
Maker ~~NAKED~~ T-31
Lot No. 38
Filler: Type VERZI. Wt. -
Fuzes 14.166-0 Lot 9-51 46
SPECIAL FIRING PIN ~~14.166-0~~
Boosters Inert - live primers
Wt. of head (as fired) 49.00MOTOR: Cal. 5" Mk. 10 Mod 4
Motor temp. 120° IT, 59.95COMPLETE ROUND: Mark Mod
Wt. (as fired) 137.75
Wt. (burned)OTHER INFORMATION MOTORS (2)
GRAIN: 15.18-0
ALIN: 6711A-317-H-50
LAUNCHER 1050' ROCKET 1.4.72-51-t

ROCKET PERFORMANCE

Flight Velocity, f/s: Striking 1923 Residual
Fuze functioning
Explosive action (High Order) (Low Order) (None)
Distance of burst behind plate
Condition of recovered round *intact*
Head was in (EFFECTIVE) (~~INFFECTIVE~~) condition.

REMARKS: Head & fuze returned to NOL

Photo No. _____ Signed F.W. Kaasch
File File No. 0-7-
C.R. 11-11-51~~CONFIDENTIAL~~
Security Information Not Required # 11

IMPACT RECORD

U. S. NAVAL PROVING GROUND
DAHLGREN, VIRGINIA

IMPACT N. 34545

IMPACT DATE 9-14-51

NPG TEST NO. 001123

OBJECT IMPACT TEST FOR COMPARISON OF FIREARMS & PILOTS~~STANDARDS IN DUE TO 166-C ROCKET FUZES IN 5" ROCKET HEADS~~Reference: NPG ~~166-C~~ dated 9-14-51Reference: BuOrd ~~166-C~~ dated 9-14-51Task Assignment No. ~~NPG - R-28-13-1-52~~ dated 4-16-1951

PLATE TARGET

Gage 2.50 Class STS
 Maker TAKEFIE
 No. 22214 Group -
 Dimensions 160" X 940"

OBLIQUITY C'

PENETRATION COMPLETE
 Thickness at Impact 2.55
 No. of impact on plate 16
 Dist. from nearest impact 11"
 Dist. from near edges 60" and L-16"
 Impact area 6" X 6"
 Spall: Front O Back C
 Dish 1/4" Spur 1"
 Cracks O
 Punching (thrown) (started)
 Back Button (thrown) (started)
 Bulge O
 Through opening 5" X 5"

ROCKET

HEAD: Cal. 5" Type SET II-1-A
 Mark 2 Mod 2 No 8245 Wt. 48.00
 Maker TSCPA Z. 3
 Lot No. 38
 Filler: Type VERM, Wt. -
 Fuze MK. 166-C I.C.T. 8-51 #26
 STANDARD FIRING: F.I.P. SET II-1-A
 Boosters INERT - live primers
 Wt. of head (as fired) 48.00

MOTOR: Cal. 5" Mk. 1C Mod 4
 Motor temp. 120° UT. 89.76COMPLETE ROUND: Mark Mod
 Wt. (as fired) 132.70
 Wt. (burned) -OTHER INFORMATION 41111-166-C
60A1-166-C
HEAT: 4200°F - 312-H-50
LAUNCHER: 1050' SLANT 1000' HGT

ROCKET PERFORMANCE

Flight Velocity, f/s: 1110 Striking 1658 Residual -
 Fuze functioning -
 Explosive action (High Order) (Low Order) (None)
 Distance of burst behind plate -
 Condition of recovered round intact
 Head Was In (EFFECTIVE) (INEFFECTIVE) EFFECTIVE

REMARKS: Head & fuze returned to NPGPhoto No. -

Signed F.W. Kandler
F.W. Kandler
Lab. Eng. 8-51

Impact Record # 12

IMPACT RECORD

U. S. NAVAL PROVING GROUND
DAHLGREN, VIRGINIAIMPACT NO. 39246IMPACT DATE 9-14-51NPG TEST NO. CODE 1090-3

OBJECT IMPACT TEST FOR COMPARISON OF FIRING PIN SPRINGS IN MK 166-0 ROCKET FUZES IN 5" R. HEADS

Reference: NPG Report No. 934 dated 9 Jul 1951
 Reference: BuOrd NOT-NP/NOL XI-1(756) Rev 01209 dated 9 Jul 1951
 Task Assignment No. NPG-Ref 24-12-1-52 dated 4 August 1951

PLATE TARGET

Gage 2.50 Class STS
 Maker CARNEGIE
 No. 32294 Group -
 Dimensions 12" X 240"

OBLIQUITY 1°PENETRATION COMPLETEThickness at impact 2.55No. of impact on plate 17Dist. from nearest impact 1.5"Dist. from near edges .45" and 1.102"Impact area 6"X6"Spall: Front 0 Back 0Dish 1/4" Spur 2"Cracks C

Punching (thrown) (started)

Back Button (thrown) (started)

Bulge 0Through opening 5"X5"

ROCKET

HEAD: Cal. 5" Type SE771-AP
 Mark 2 Mod 2 No 3904 Wt. 48.00 #
 Maker CSPA + .30
 Lot No. 38
 Filler: Type LEKITE Wt. —
 Fuze: MK 166-0 LOT 8-51 #7
SPECIAL FIRING PIN SPRING
 Boosters inert - live primers
 Wt. of head (as fired) 48.00 #

MOTOR: Cal. 5" Mk. 10 Mod 4
 Motor temp. 120° F. 88.50

COMPLETE ROUND: Mark Mod
 Wt. (as fired) 136.50 #
 Wt. (burned) —

OTHER INFORMATION MOTORS (2)
GRAIN = 60% 18-0
ALN = KM102-312-H-50
LAUNCHER 1050 ROCKET LAUNCHER

ROCKET PERFORMANCE

Flight MEAN Velocity, f/s: Striking 1714 Residual —
 Fuze functioning —
 Explosive action (High Order) (Low Order) (None)
 Distance of burst behind plate —
 Condition of recovered round intact
 Head was in (EFFECTIVE) (INFFECTIVE) condition.

REMARKS: Head & fuze returned to NDL.Photo No. —

Signed F. W. Kaadorf
F. W. KAADORF, E. S. C.
101-116, 65-12

CONFIDENTIALSecurity classification: Impact Record #13

IMPACT RECORD

U. S. NAVAL PROVING GROUND
DAHLGREN, VIRGINIAIMPACT NO. 39247IMPACT DATE 9-14-51NPG TEST NO. CODE 10903OBJECT IMPACT TEST FOR COMPARISON OF FIRING PIN SPRINGS IN MK 166-A ROCKET FUZES IN 5" ROCKET HEADSReference: NPG REF. NO. 10903 dated 9-14-51Reference: Board for NOL Ref. NOL/NPL/XI-1(756)B-1 C1209 dated 9-14-51Task Assignment No. NPG-Re/2b/12-1-52 dated 4-14-51

PLATE TARGET

Gage 2.5" Class STS
 Maker CANNETTE
 No. 22794 Group -
 Dimensions 120" X 240"

OBLIQUITY 0°PENETRATION COMPLETEThickness at impact 2.55No. of impact on plate 18Dist. from nearest impact 2.5"Dist. from near edges .54" and 1.90"Impact area 6" X 6"Spall: Front ✓ Back ✓Dish 1/4" Spur 2"Cracks 0Punching (thrown) (started) 0Back Button (thrown) (started) 0Bulge 0Through opening 3" X 5"

ROCKET

HEAD: Cal. 5" Type SE711-AP
 Mark 2 Mod 2 No. 8956 Wt. 48.00#
 Maker ESCA Lot No. 38
 Filler: Type VERMI. Wt. -
 Fuze MK 166-A LOT 8-51 #37
STANDARD FIRING PIN SPRING
 Boosters front - live primers
 Wt. of head (as fired) 48.00#

MOTOR: Cal. 5" Mk. 10 Mod 4
 Motor temp. 120° K.T. 90.3C#

COMPLETE ROUND: Mark Mod
 Wt. (as fired) 128.30#
 Wt. (burned) -

OTHER INFORMATION MOTORS (2)

GRAIN - NO. 18-0
BLK. K7114-317-H-50
LAUNCHER 1C5L ROCKET LAUNCHER

ROCKET PERFORMANCE

Flight MEAN
 Fuze functioning Striking Velocity, f/s: 1792 Residual -
 Explosive action (High Order) (Low Order) (None)
 Distance of burst behind plate -
 Condition of recovered round Head was in (EFFECTIVE) (INEFFECTIVE) condition

REMARKS: Head & fuze returned to N.D.Photo No. 10903

Signed F.W. Kowalski
F.I.R.H.S.C.A. E.S.C.A.
CH. E714. 9-12

Impact Record #14

IMPACT RECORD

U. S. NAVAL PROVING GROUND
DAHLGREN, VIRGINIAIMPACT NO. 39248IMPACT DATE 9-14-51NPG TEST NO 300E 10903OBJECT IMPACT TEST FOR COMPARISON OF F111 & F112
FUSES IN 166-A ROCKET FUZES IN 5" ROCKET HEADSReference: NPG ~~111~~ Impact Test No. 934 datedReference: BuOrd ltr. NOL in ND/NOL/XI-1 (756) & 0126 dated 9 Oct 1951Task Assignment No. NPG-Ke 28-12-1-52 dated 4 August 1951PLATE TARGETGage 2.50 Class STS
Maker CHICAGO
No. 32294 Group -
Dimensions 120" XOBLIQUITY 0PENETRATION

Thickness at impact

No. of impact on plate 19Dist. from nearest impact 11"Dist. from near edges .60" and 1.99"Impact area 6" X 6"Spall: Front 0 Back 0Dish 1/4" Spur 1"Cracks 0

Punching (thrown) (started)

Back Button (thrown) (started)

Bulge 0Through opening 5" X 5"ROCKETHEAD: Cal. 5" Type SENTRY-A
Mark 2 Mod 2 No 8953 Wt. 48.00
Maker USCA T-31
Lot No. 38
Filler: Type VERM, Wt. -
Fuzes PIK 166-A LOT 8-51 #8
SPECIAL FIELD PIN F-1B
Boosters inert - live primers
Wt. of head (as fired) 48.00MOTOR: Cal. 5" Mk. 10 Mod 4
Motor temp. 120° RT. 89.60COMPLETE ROUND: Mark Mod
Wt. (as fired) 125.50
Wt. (burned) -OTHER INFORMATION GRAIN - 0.16 18-0
ALN - 10.00 - 211-4-50
LAUNCHER 1050' ROCKET LAUNCHER

ROCKET PERFORMANCE

Flight MEAN Velocity, f/s: striking 1844 Residual -

Fuze functioning

Explosive action (High Order) (Low Order) (None)

Distance of burst behind plate

Condition of recovered round

Head was in (EFFECTIVE) (in tact) (INEFFECTIVE) condition

REMARKS: Head & fuze returned to NPG

Photo No. 100 Signed F. L. V. Kastor
F. L. V. Kastor
C. L. F. K. 6-15Impact Test Report No. 100

IMPACT RECORD

U. S. NAVAL PROVING GROUND
DAHLGREN, VIRGINIAIMPACT NO. 39249IMPACT DATE 9-14-51NPG TEST NO. CODE 10912

OBJECT IMPACT TEST FOR COMPARISON OF FIRING & PIN SPALLS IN MK166-0 ROCKET FUZES IN 5" ROCKET HEADS...

Reference: NPG Spec. Report 744-4 dated 9-14-51
 Reference: Board Itr. No. NPAOL XI-1(196) 1-2-9 dated 9-14-51
 Task Assignment No. NPG-R-24-12-1-52 dated 4 Oct 1951

PLATE TARGET

Gage 2" ST Class STS
 Maker AMER. ELE.
 No. 37294 Group -
 Dimensions 120" X 24"

OBLIQUITY 0°PENETRATION 1/2" DEPTHThickness at impact 2.55"No. of impact on plate 20Dist. from nearest impact 1/2"Dist. from near edges 1/4" and 1-5/8"Impact area 6" X 6"Spall: Front C Back CDish 1/4" Spur 2"Cracks 0Punching (thrown) (started) 0Back Button (thrown) (started) 0Bulge 0Through opening 5" X 5"

ROCKET

HEAD: Cal. 5" Type SENII-AP
 Mark 2 Mod 2 No 8934 Wt. 48.00 #
 Maker CSCA + .36
 Lot No. 38
 Filler: Type VE6711 Wt. -
 Fuze MK166-0 LOT 8-51 #38
STANDARD FIRING PIN SPALLS
 Boosters inert - live primers
 Wt. of head (as fired) 48.00 #

MOTOR: Cal. 5" Mk. 10 Mod 4
 Motor temp. 120° KT. 58.15

COMPLETE ROUND: Mark Mod
 Wt. (as fired) 136.15 #
 Wt. (burned) -

OTHER INFORMATION MOTOR'S (2)
GRAIN: PIK 18-6
HLN: KNAKA 311-4-50
LAUNCHER 1050' ROCKETS LAUNCHER

ROCKET PERFORMANCE

Flight VEAR Velocity, f/s: striking 1360 Residual -
 Fuze functioning -
 Explosive action (High Order) (Low Order) (None)
 Distance of burst behind plate -
 Condition of recovered round intact
Head was in (EFFECTIVE) (INFFECTIVE) condition.

REMARKS: Head & fuze returned to NDL.

Photo No. _____ Signed F W. Kaeding
FBI, KANSAS CITY
CLL: EIG: 6-5-12

~~CONFIDENTIAL~~

Impact Record #16

IMPACT RECORD

U. S. NAVAL PROVING GROUND
DAHLGREN, VIRGINIAIMPACT NO. 39250IMPACT DATE 9-14-51NPG TEST NO CODE 10903

OBJECT IMPACT TEST FOR COMPARISON OF FIRING PIN SPRINGS IN 12.5" 166-C ROCKET FUZES IN 5" ROCKET HEADS
 Reference: NPG ltr. dated 7/14/51
 Reference: Buord ltr. NOL ltr NPL/NPL/X-11756 dated 10/20/51
 Task Assignment No. NPG-Re 2-C-L-12-1-52 dated 4 August 1951

PLATE TARGET

Gage 2" Class STS
 Maker CARNEGIE
 No. 32294 Group -
 Dimensions 120" X 240"
 OBLIQUITY 0°

PENETRATION COMPLETE
 Thickness at impact 21
 No. of impact on plate 21
 Dist. from nearest impact 13"
 Dist. from near edges .57" and .56"
 Impact area 6" x 6"
 Spall: Front 0 Back 0
 Dish 1/4" Spur 2"
 Cracks 0
 Punching (thrown) (started) 0
 Back Button (thrown) (started) 0
 Bulge 0
 Through opening 5" X 5"

ROCKET

HEAD: Cal. 5" Type SE211-AF
 Mark 2 Mod 2 No. 8742 Wt. 113.00 #
 Maker CSCA ± .30
 Lot No. 98
 Filler: Type VERIT, Wt. -
 Fuze MK 166-C LOT 8-51 #9
SPECIAL FIRING FIP SE211-A
 Boosters none - live primers
 Wt. of head (as fired) 78.00 #

MOTOR: Cal. 5" Mk. 10 Mod 4
 Motor temp. 120° F. 87.70

COMPLETE ROUND: Mark Mod
 Wt. (as fired) 135.70 #
 Wt. (burned) -

OTHER INFORMATION MOTORS (2)

IGNITER: DIA 18-0
DET: RND 4-317-5-50
LAUNCHER 1050' ROCKET LAUNCHER

ROCKET PERFORMANCE

Flight Velocity, f/s: striking 1732 Residual -
 Fuze functioning MEAN
 Explosive action (High Order) (Low Order) (None)
 Distance of burst behind plate -
 Condition of recovered round intact
 Head was in (EFFECTIVE) (INFFECTIVE) condition.

REMARKS: Head of fuze not recovered intact

Photo No. _____

Signed F. W. Kastorff
F. W. KASTORFF, et al
OKD, E&E, ES-12

CONFIDENTIAL
 Security Classification: CONFIDENTIAL Record No. 11

IMPACT RECORD

U. S. NAVAL PROVING GROUND
DAHLGREN, VIRGINIAIMPACT NO. 39256IMPACT DATE 9-18-51NPG TEST NO. 10903

OBJECT IMPACT TEST FOR COMPARISON OF FIRING PIN
THICKNESSES IN MK 166-0 ROCKET FUZES
Reference: NPG Rep. Report M1 934 dated 9 Jul. 1951
Reference: BuOrd ltr. NOL ltr NP/NOL/XI-1(756) Ser 01209 dated 9 Jul. 1951
Task Assignment No. NPG-Re2 P-12-1-52 dated 4 August 1951

PLATE TARGET

Gage 2" Class STS
Maker - No. - Group -
Dimensions 96" X 252"

OBLIQUITY 32°

PENETRATION COMPLETE
Thickness at impact 1.97
No. of impact on plate
Dist. from nearest impact .16"
Dist. from near edges .45" and .65"
Impact area 6" X 7"
Spall: Front 0 Back 0
Dish .14" Spur .2"
Cracks 0
Punching (thrown) (started)
Back Button (thrown) (started)
Bulge 0
Through opening 5" X 5 = 34"

ROCKET

HEAD: Cal. .5" Type SEMI-AUTOMATIC
Mark 2 Mod 2 No 493 Wt. .38 CL #
Maker TSCA Lot No. 38
Filler: Type VERM, Wt. -
Fuzes MK 166-0 LET 8-51 #39
STANDARD FIRING PIN SYSTEM
Boosters inert - live primers
Wt. of head (as fired) .48.00

MOTOR: Cal. .5" Mk. 10 Mod 4
Motor temp. 134° U.T. 88.95#

COMPLETE ROUND: Mark Mod
Wt. (as fired) 136.95
Wt. (burned) -

OTHER INFORMATION MOTORS (#)
ALN: K21DA-317-H-50
CAPI: 1100-15-C
LAUNCHER 1C50 ROCKET LAUNCHER

ROCKET PERFORMANCE

Flight Velocity, f/s: striking 1805 Residual -
Fuze functioning NEUTRAL
Explosive action (High Order) (Low Order) (None)
Distance of burst behind plate -
Condition of recovered round
Head was in (EFFECTIVE) intact (INFEFFECTIVE) condition.

REMARKS: Head & fuze returned to NOL

Photo No. -Signed F. W. KasdorfF. W. Kasdorf
ORD. ENG. 8-18

CONFIDENTIAL
Security Information!

Impact Record #18

IMPACT RECORD

U. S. NAVAL PROVING GROUND
DAHLGREN, VIRGINIA

IMPACT NO. 3926-C

IMPACT DATE 1-22-51

NPG TEST NO. C-109C

OBJECT IMPACT TEST FOR 3" GRAIN FF FINE FINES IN 5" X 6" RACKET HEAD
 Reference: NPG Test No. 7 dated 7/10/51
 Reference: Board No. NOL DR NPG/NQ/XI-1(756) & 0120 dated 9/21/1951
 Task Assignment No. NPG-RC-2L-12-1-52 dated 4 August 1951

PLATE TARGET

Gage 2" Class STS
 Maker THEEGTE
 No. - Group -
 Dimensions -
 OBLIQUITY 30°

PENETRATION COMPLETE
 Thickness at impact 1.95
 No. of impact on plate -
 Dist. from nearest impact 22"
 Dist. from near edges 44" and L-162"
 Impact area 5"X6"
 Spall: Front 0 Back 0
 Dish 1/4" Spur 2"
 Cracks 0
 Punching (thrown) (started)
 Back Button (thrown) (started)
 Bulge 0
 Through opening 5"X5"

ROCKET

HEAD: Cal. 5" Type 3E7H1-AF
 Mark 2 Mod 2 No 8994 Wt. 48.00#
 Maker CSGA t.3A
 Lot No. 38
 Filler: Type VERM. wt. -
 Fuze MK 166-0 LOT 8-51 #10
 SPECIAL FIRING FIN FIRING
 Boosters -
 Wt. of head (as fired) 48.00#

MOTOR: Cal. 5" Mk. 2 Mod 3
 Motor temp. 120° WT. 88.65#

COMPLETE ROUND: Mark Mod
 Wt. (as fired) 18.65#
 Wt. (burned) -

OTHER INFORMATION MOTORS (2) M-15-6
 67106-385-MCA-45

LAUNCHER -523- 1050' ROCKET LAUNCHER

ROCKET PERFORMANCE

Flight Velocity, f/s: striking 1654 Residual -
 Fuze functioning -
 Explosive action (High Order) (Low Order) (None)
 Distance of burst behind plate -
 Condition of recovered round Head was in (EFFECTIVE) (INDEFECTIVE) condition.

REMARKS: Head & Fuze returned to NCL.
 Fuze has live primers, otherwise intact.

Photo No. _____

Signed F. H. Kasten
 F. H. KASTEN, JR.,
 CDR, EPL, ES-12

CONFIDENTIAL

Q. + Record # 19

IMPACT RECORD

U. S. NAVAL PROVING GROUND
DAHLGREN, VIRGINIAIMPACT NO. 39369IMPACT DATE 9-22-51NPG TEST NO. 112-115

OBJECT IMPACT TEST FOR COMPARISON OF FIRING
PLAN SPRINGS IN MK 166-0 ROCKET FUZES

Reference: NPG 4tr. 7 dated 9-21-51
 Reference: BuOrd 1tr. NOL tr NP/NGL XI-1(75g) dated 101209 dated 9-21-1951
 Task Assignment No. NPG-Ked. 12-1-52 dated 4 August 1951

PLATE TARGETGage 2.0 Class STSMaker CARNEGIE

No. _____ Group _____

Dimensions _____

OBLIQUITY 32°PFNETRATION COMPLETEThickness at Impact 1.95No. of impact on plate —Dist. from nearest impact 19"Dist. from near edges 1.48" and 1.144"Impact area 6"X7"Spall: Front 0 Back 0Dish 1/4" Spur 2"Cracks 0Punching (thrown) (started) —Back Button (thrown) (started) —Bulge 0Through opening 5"X5 1/2"ROCKETHEAD: Cal. 5" Type SEMI-RFMark 2 Mod 2 No. 8956 Wt. 48.00 #Maker CSLA t-30Lot No. 38Filler: Type VERMIL Wt. —Fuzes MK166-0 LOT 5-51 #40STD FIRING FOR FIRINGBoosters —Wt. of head (as fired) 48.00 #MOTOR: Cal. 5" Mk. 2 Mod 3Motor temp. 120° R.T. 88.15COMPLETE ROUND: Mark — Mod —Wt. (as fired) 136.15 #Wt. (burned) —OTHER INFORMATION MOTORS (2) 585-13A-45585-13A-45LAUNCHER 1050 ROCKET LAUNCHER

ROCKET PERFORMANCE

Flight Velocity, f/s: MEAN 1838 Residual —Fuze functioning —Explosive action (High Order) (Low Order) (None)Distance of burst behind plate —Condition of recovered round intact

Head was in (EFFECTIVE) (INFFECTIVE) condition.

REMARKS: Head & Fuze returned to NPG.

Fuze have low pressure; otherwise intact.

Photo No. _____

Signed F.W. KarsdorffF.I.R.E.C.D. FO 27S.C. 5100 47-1001000 ft. 10 sec. 47-100

IMPACT RECORD

U. S. NAVAL PROVING GROUND
DAHLGREN, VIRGINIAIMPACT NO. 39271IMPACT DATE 9-22-51NPG TEST NO. CODE 10903OBJECT IMPACT TEST FOR COMPLETENESS OF FIRING
PIN SIGHTS IN MK 166-0 ROCKET FUZESReference: NPG ltr. dated 9-22-51
Reference: Buord ltr. NDLtr NPNOLR-1(756) Aer 01209 dated 9-22-51
Task Assignment No. NPG-Re2tr-12-1-52 dated 4 Aug 1951PLATE TARGETGage 3.0 Class STS
Maker CARNEGIE
No. - Group -
Dimensions -OBLIQUITY 30°PENETRATION COMPLETE
Thickness at impact 1.95
No. of impact on plate -
Dist. from nearest impact 7/16"
Dist. from near edges 1.31" and 1.14"
Impact area 6" X 7"
Spall: Front 0 Back 0
Dish 1/4" Spur 2"
Cracks 0
Punching (thrown) (started) -
Back Button (thrown) (started) -
Bulge 0
Through opening 5" X 6"ROCKETHEAD: Cal. 5" Type SEMI-A P
Mark 2 Mod 2 No 8907 Wt. 48.00#
Maker AT&T ± .30
Lot No. 55
Filler: Type STAN. Wt. -
Fuzes Mit 166-0 LOT 8-51 #41
STD FIRING PIN SPRINGS
Boosters -
Wt. of head (as fired) 48.00#MOTOR: Cal. 5" Mk. 2 Mod 3
Motor temp. 120° Wt. 88.65#COMPLETE ROUND: Mark Mod
Wt. (as fired) 136.65#
Wt. (burned) -OTHER INFORMATION MOTORS (2) GAIA
ALN: ATMA-5RS-MFA-45
" -523 "LAUNCHER 1050' ROCKET LAUNCHERROCKET PERFORMANCEFlight MEAN
Fuze functioning 1750 Residual -
Explosive action (High Order) (Low Order) (None)
Distance of burst behind plate -
Condition of recovered round -
Head was in (EFFECTIVE) (INFFECTIVE) condition.REMARKS: Fuze had live primacy; otherwise inert.
Head & Fuze returned to NPGPhoto No. -Signed F. W. Kaador!FILE: RASDNG
DATE: 2-22-62
FIG: 12PRINT RECORDED
INCL: IMPACT TEST FOR PIN SIGHTS

IMPACT RECORD

U. S. NAVAL PROVING GROUND
DAHLGREN, VIRGINIAIMPACT NO. 392-72IMPACT DATE 9-22-51NPG TEST NO. Code 10903OBJECT IMPACT TEST FOR COMPARISON OF FIRING
PIN SPARKS IN MK 166-A ROCKET FUZESReference: NPG ltr. 166-A Fuzes dated 7-20-51
Reference: Board ltr. NOL 166-A Fuzes dated 9 July 1951
Task Assignment No. NPG-Res 1 12-1-51 dated 4 August 1951PLATE TARGETGage 2" Class STS
Maker THOMAS Mod. 1
No. - Group -
Dimensions -OBLIQUITY 30°PENETRATION COMPLETEThickness at Impact 7.95No. of impact on plate -Dist. from nearest impact 16"Dist. from near edges .29" and 1-16"Impact area 5" X 6"Spall: Front 0 Back 0Dish 1/4" Spur 3"Cracks 0Punching (thrown) (started) -Back Button (thrown) (started) -Bulge 0Through opening 5" X 5 1/2"HEAD: Cal. 5" Type SEMI-RF
Mark 2 Mod 2 No. 8993 Wt. 49.00
Maker TS-14 Lot 8-51
Lot No. 38
Filler: Type VERTI. Wt. -
Fuzes MK 166-A LOT 8-51 12
SPECIAL FIRING PIN SPARKS
Boosters -
Wt. of head (as fired) 48.00MOTOR: Cal. 5" Mk. 2 Mod 2
Motor temp. 120° Wt. 87.65COMPLETE ROUND: Mark Mod
Wt. (as fired) 125.65
Wt. (burned) -OTHER INFORMATION MOTORS (S.) 6TH
PN: PANDA 585-MCA-45
" - 323 "LAUNCHER 1050 ROCKET LIFT 45°

ROCKET PERFORMANCE

Flight Velocity, f/s: Starting 1679 Residual -
Fuze functioning -
Explosive action (High Order) (Low Order) (None) -
Distance of burst behind plate -
Condition of recovered round extract
Head was in (EFFECTIVE) (INDESTRUCTIVE) condition -REMARKS: Fuze had live primers; otherwise inert
Head was returned to NPG.Photo No. -Signed F. W. Kastor
F. W. KASTOR, Lt
OIC, Eng. GS-12RECORDEDSecurity: B in H SECRET Decom. T-23

IMPACT RECORD

U. S. NAVAL PROVING GROUND
DAHLGREN, VIRGINIAIMPACT NO. 39273IMPACT DATE 9-22-51NPG TEST NO. CODE 1992

OBJECT IMPACT TEST FOR COMPARISON OF FIRING PIN SETTLES IN MK 166-A ROCKET FUZES
 Reference: NPG ltr. Rev. art. 720. 9-3-44 dated
 Reference: BuOrd ltr. NOL By NPNOL XI-1(756) M-01209 dated 9-21-1951
 Task Assignment No. NPG-Rec't-12-1-52 dated 4 Oct 1951

PLATE TARGET

Gage 2" Class STS
 Maker CARNEGIE
 No. - Group -
 Dimensions -

OBLIQUITY 30°

PENETRATION COMPLETE
 Thickness at impact 1.95
 No. of impact on plate -
 Dist. from nearest impact 28"
 Dist. from near edge .65" and 1.82"
 Impact area 6" X 7"
 Spall: Front 0 Back 0
 Dish 1/4" Spur 2"
 Cracks 0
 Punching (thrown) (started)
 Back Button (thrown) (started)
 Bulge 0
 Through opening 3" X 6"

ROCKET

HEAD: Cal. 5" Type SEMI-A
 Mark 2 Mod 2 No 8932 Wt. 40.00#
 Maker USCA ± .30
 Lot No. 38
 Filler: Type VERJ. Wt. -
 Fuze MK166-A LAT S-51 #42-
STD FILLING pin 1.125"
 Boosters -
 Wt. of head (as fired) 40.00#

MOTOR: Cal. 5" Mk. 2 Mod 3
 Motor temp. 130° FT. 82.2°

COMPLETE ROUND: Mark Mod
 Wt. (as fired) 127.25#
 Wt. (burned) -

OTHER INFORMATION 110TC15-3 EXAM.
BLK: PMCA-585-MH-115

LAUNCHER 1050' ROCKET LAUNCHER

ROCKET PERFORMANCE

Flight MEAN Velocity, f/s: 1883 Residual -
 Fuze functioning -
 Explosive action (High Order) (Low Order) (None)
 Distance of burst behind plate -
 Condition of recovered round intact
 Head was in (EFFECTIVE) (INEFFECTIVE) condition.

REMARKS: Fuze had live prime; otherwise intact.
Head & fuze returned to NPG.

Photo No. -

Signed F.W. KASDORF
F.W. KASDORF, 1st
CRD, E&E, 6-5-52

CONFIDENTIAL
 Impact Record #24

IMPACT RECORD

U. S. NAVAL PROVING GROUND
DAHLGREN, VIRGINIA

IMPACT NO. 39274

IMPACT DATE 9-22-51

NPG TEST NO CODE 10903

OBJECT IMPACT TEST FOR COMPARISON AT FIRING
PIN SPRINGS IN MK 166-2 ROCKET FUZESReference NPG Report No. 9-34 dated
Reference Board 16 NOL DR NPD/NDL(X) (156) 101209 dated 9 July 1951
Task Assignment No. NPG-Rec'd - 12-1952 dated 4/2/1951

PLATE TARGET

ROCKET

Gage 2.0 Class 575
Maker CARNEGIE
No. Group
Dimensions

OBLIQUITY 30°

PENETRATION COMPLETE

Thickness at impact 1.95
No. of impact on plate
Dist. from nearest impact 1.71
Dist. from near edges 1.53 and 2.94
Impact area 6" x 7"
Spall: Front 0 Back 0
Dish 1/4" Spur 2"
Cracks 0
Punching (thrown) (started)
Back Button (thrown) (started)
Bulge 0
Through opening 5" x 6"HEAD: Cal. 5" Type SEMI-AP
Mark 2 Mod 2 No 8882 Wt. 48.00 #
Maker (USA) ± .30
Lot No. 36Filler: Type VERM, Wt.
Fuzes MK 166-2 LOT R-51 #13
SPECIAL FIRING PIN SPRING
Boosters

Wt. of head (as fired) 48.00 #

MOTOR: Cal. 5" Mk. 2 Mod 3
Motor Temp. 120° Wt. 89.00 #COMPLETE ROUND: Mark. Mod.
Wt. (as fired) 139.00 #
Wt. (burned)OTHER INFORMATION MOTORS (2) GRAN
ALN: RNDR-385-DMA-45

LAUNCHER 1050' ROCKET LAUNCHER

ROCKET PERFORMANCE

Flight Velocity, f/s: 1839 Residual
Fuze functioning
Explosive action (High Order) (Low Order) (None)
Distance of burst behind plate
Condition of recovered round
Head was in (EFFECTIVE) (INEFFECTIVE) condition.REMARKS: Face has the primary otherwise intact.
Head & fuze returned to NPG

Photo No.

Signed F. W. Kasdorf
F.W. KASDORF Jr.
ORD. ENG. 05-12

CONFIDENTIAL

Security Information on Impact Record #25

IMPACT RECORD

U. S. NAVAL PROVING GROUND
DAHLGREN, VIRGINIAIMPACT NO. 21225IMPACT DATE 9-22-51NPG TEST NO CODE 10903OBJECT TRIAGET TEST FOR CORRECTION OF FLAME
FIRE IN THE 166-G ROCKET MOTORReference: NPG ltr. 7-21-51 dated 7-21-51
Reference: BuOrd ltr. 7-21-51 dated 7-21-51
Task Assignment No. NPG-Test-166-G dated 4 August 1951

PLATE TARGET

Gage 8.0 Class STD
Maker CARNEGIE
No. _____ Group _____
Dimensions _____OBLIQUITY 30°PENETRATION CONCRETE
Thickness at impact 11.95
No. of impact on plate _____
Dist. from nearest impact 12"
Dist. from near edges .42" and 2.45"
Impact area 6" X 7"
Spall: Front 0 Back 0
Dish 1/4" Spur 0"
Cracks 0
Punching (thrown) (started)
Back Button (thrown) (started)
Bulge 0
Through opening 5" X 5-3/4"HEAD: Cal. 5" Type SEN 1-PC
Mark " Mod 3 No 950 Wt. 4.00
Maker "
Lot No. "
Filler: Type STD Wt. -
Fuzes STD Firing 210 ft. -
Boosters -
Wt. of head (as fired) 4.85MOTOR: Cal. 5" Mk. 2 Mod 3
Motor temp. 126° Wt. 87.85COMPLETE ROUND: Mark Mod
Wt. (as fired) 13.5.85#
Wt. (burned) "OTHER INFORMATION MOTOR'S (2)
BLK: 4700A-585-100-45
LAUNCHER 1050' RCKET LAUNCHER

ROCKET PERFORMANCE

Flight _____ Velocity, f/s: 1769 Residual _____
Fuse functioning _____
Explosive action (High Order) (Low Order) (None)
Distance of burst behind plate _____
Condition of recovered round
Head was in (EFFECTIVE) (INEFFECTIVE) condition.REMARKS: Fuse has live prongs; otherwise intact.
Head & fuse returned to NPG.

Photo No. _____

Signed F. W. Kauder
F. W. Kauder
Ch. 112

4-1-51 and 4-26

IMPACT RECORD

U. S. NAVAL PROVING GROUND
DAHLGREN, VIRGINIA

IMPACT NO. 34276

IMPACT DATE 9-22-51

NPG TEST NO. CODE 1042

OBJECT Impact Test For Comparison of Engine
Flame Arresters in NF 166-0 Rocket FlaresReference: NPG intr. 720934 dated
Reference: Buord intr. NOL intr. NP/NOL/KI-1 (756) dated 9-22-51
Task Assignment No. NPG-Res-12-1 dated 9-22-51

PLATE TARGET

Gage 2.0 Class 575
Maker DAHLGREN
No. Group
Dimensions -

OBLIQUITY 30°

PENETRATION COMPLETE
Thickness at impact 1.95
No. of impact on plate -
Dist. from nearest impact 18"
Dist. from near edges L-27 and L-107"
Impact area 5" X 6"
Spall: Front O Back C
Dish 1/4" Spur 2"
Cracks O
Punching (thrown) (started)
Back Button (thrown) (started)
Bulge
Through opening 5" X 5 1/2"

ROCKET

HEAD: Cal. 5" Type SEMI-FF
Mark 2 Mod 2 No. 898 Wt. 45.00
Maker C.R.P. F.50
Lot No. 38
Filler: Type PERNG. Wt. -
Fuzes NF 166-0 - 2 - 51 #14
SPECIAL EQUIPMENT -
Boosters
Wt. of head (as fired) 48.00MOTOR: Cal. 5" Mk. 2 Mod 3
Motor temp. 120° RT. 88.10COMPLETE ROUND: Mark Mod
Wt. (as fired) 136.10
Wt. (burned) -OTHER INFORMATION MOTORS (2) 1-11
AN: 11104-585-M-A-45

LAUNCHER 10.5" ROCKET LAUNCHER

ROCKET PERFORMANCE

Flight Velocity, f/s: striking 1871 Residual -
Fuze functioning
Explosive action (High Order) (Low Order) (None)
Distance of burst behind plate
Condition of recovered round
Head was in (EFFECTIVE) (INEFFECTIVE) condition.REMARKS: Fuze was live during otherwise intact.
Head & Fuze returned to NPG

Photo No. _____

Signed F.W. Kastor
F.W. KASTOR
10.5" RT. 88.10

10.5" RT. 88.10

IMPACT RECORD

U. S. NAVAL PROVING GROUND
DAHLGREN, VIRGINIA

IMPACT NO. 27277

IMPACT DATE 9-22-51

NPG TEST NO. _____

OBJECT Impact Test for Comparative EffectivenessReference: NPG Test dated 11-15-51
Reference: Procedure NLR-NOM-LXI-1(75a) for C.I.T. dated 7-1-51
Task Assignment No. NPG-R2.6-12-1-52 dated 4-16-51 + 11-51PLATE TARGETGage 2.0 Class ST3
Maker PERFECT
No. - Group -
Dimensions -OBLIQUITY 30°PENETRATION COMPLETE
Thickness at impact 1.55
No. of impact on plate -
Dist. from nearest impact 14"
Dist. from near edges 4" and 1.75"
Impact area 6" X 7"
Spall: Front 0 Back 0
Dish 1/4" Spur 2"
Cracks 0
Punching (thrown) (started)
Back Button (thrown) (started)
Bulge 0
Through opening 5" X 5 1/2"ROCKETHEAD: Cal. 5" Type STD-AF
Mark 2 Mod 2 No. 274 Wt. 48.5
Maker C-14 Lot 5-51
Lot No. 58
Filler: Type STD, Wt. -
Fuzes "A" 166-C Lot 5-51 4.44
STD "A" 166-C STD
Boosters -
Wt. of head (as fired) 48.00MOTOR: Cal. 5" Mk. 2 Mod 2
Motor temp. 120° F. 88.25 ftCOMPLETE ROUND: Mark Mod
Wt. (as fired) 121.25
Wt. (burned) -OTHER INFORMATION MOTOR: (2) 60A
HEAD: STD-B-585-DIA-45
" -52.3 - "
LAUNCHER 105A DISCHARGE LAUNCHER

ROCKET PERFORMANCE

Flight 1250 ft
Fuze functioning Striking
Explosive action (High Order) (Low Order) (None)
Distance of burst behind plate -
Condition of recovered round Head was in (EFFECTIVE) (INEFFECTIVE) conditionREMARKS: Fuze has live primers; otherwise intact
Head & fuze returned to NPG.

Photo No. _____

Signed F.W. Kaestner
F.A.T. 11-22-51
195-212-48 12200 ft 1.5 sec 100 ft 1.5 sec

IMPACT RECORD

U. S. NAVAL PROVING GROUND
DAHLGREN, VIRGINIAIMPACT NO. 29218IMPACT DATE 9-24-51NPG TEST NO. Code 10702

OBJECT IMPACT TEST FOR COMPARISON OF FIRING
FIN SERVING 11V, MK 166 A 20' FT FUZE
 Reference: NPG Itr. No. 9 34 dated 7
 Reference: ~~Recd.~~ NO. (THE NPG) X-1 (751) dated 6126 dated 9 July 1951
 Task Assignment No. NPG-R-24-17-1-52 dated 4 Aug. 1951

PLATE TARGET

Gage 2.1 Class STC
 Maker CARNEGIE
 No. - Group -
 Dimensions -

OBLIQUITY 30°PENETRATION COMPLETEThickness at Impact 2.0No. of impact on plate -Dist. from nearest impact 11"Dist. from near edges 1.36" and 1.84"Impact area 6" x 7"Spall: Front 0 Back 0Dish 1/4" Spur 2"Cracks 0Punching (thrown) (started) -Back Button (thrown) (started) -Bulge 0Through opening 5" x 6"

ROCKET

HEAD: Cal. 5" Type SETA 4-1-1
 Mark 2 Mod 2 No. 896 Wt. 17.0
 Maker REED Lot No. 38
 Filler: Type VERM. Wt. -
 Fuze MK 166-A LOT 3-51 #15
SPECIAL FIREARM FIN SERVING
 Boosters T-60 Wt. of head (as fired) 48.0

MOTOR: Cal. 5" MK. 2 Mod 2
 Motor temp. 120° UT. 89.30

COMPLETE ROUND: Mark Mod
 Wt. (as fired) 137.20 Wt. (burned) 64.80

OTHER INFORMATION PISTOL (2) MK 17-1
FIN: FURNITURE 1444-HA-45

LAUNCHER 1050 SOCKET LAUNCHER

ROCKET PERFORMANCE

Flight Velocity, f/s: Striking 184.8 Residual -
 Fuze functioning OPEN
 Explosive action (High Order) (Low Order) (None)
 Distance of burst behind plate -
 Condition of recovered round intact
 Head was in (EFFECTIVE) (INEFFECTIVE) condition

REMARKS: Fuze has hit primary; otherwise intact.Head & fuze returned to NPG.Photo No. -

Signed F. W. Koenig
FIREARMS DEPT.
CDL, ENTR. GS-12

~~CONFIDENTIAL~~
 Secrecy classification of impact Record #29

IMPACT RECORD

U. S. NAVAL PROVING GROUND
DAHlgREN, VIRGINIA

IMPACT NO. 34-117

IMPACT DATE 9-24-51

NPG TEST NO. COVE 10903

OBJECT Impact Test for Comparison of Firing Pin
SPANNERS IN MK 166 ROCKET TIRESReference: NPG Itr. 720934 dated
Reference: Board Itr. NOL DR. N. ING XI-176 dated 9-24-51
Task Assignment No. NPG-TR-2-1-52 dated 4-21-51

PLATE TARGET

Gage 2"0 Class STS
Maker CARNEGIE
No. - Group -
Dimensions -

OBLIQUITY 30°

PENETRATION COMPLETE
Thickness at impact 2"0
No. of impact on plate
Dist. from nearest impact 26"
Dist. from near edges 14" and 1.36"
Impact area 5"X6"
Spall: Front 0 Back 0
Dish 1/4" Spur 2"
Cracks 0
Punching (thrown) (started)
Back Button (thrown) (started)
Bulge 0
Through opening 5" X 5 1/2"

ROCKET

HEAD: Cal. 5" Type 1661-111
Mark 2 Mod 2 No 8958 Wt. 48.00
Maker CSCA T. 30
Lot No. 38
Filler: Type VERNON Wt. -
Fuzes MK 166-0 LOT 8-51 #445
STD FIRING PIN SPRINGS
Boosters
Wt. of head (as fired) 48.00MOTOR: Cal. 5" Mk. 2 Mod 2
Motor temp. 130° 47. 89.30COMPLETE ROUND: Mark Mod
Wt. (as fired) 137.50
Wt. (burned) -OTHER INFORMATION PILOTS (2) GRAB
PNL: 1411-PA-45

LAUNCHER 105G ROCKET LAUNCHER

ROCKET PERFORMANCE

Flight Velocity, f/s: Striking 1686 Residual -
Fuze functioning
Explosive action (High Order) (Low Order) (None)
Distance of burst behind plate
Condition of recovered round
Head was in (EFFECTIVE) (IMPERFECTIVE) condition.

REMARKS: Fuze has inc primed otherwise intact

Head & fuze returned to NPG

Photo No. _____

Signed F.W. Kaadie

F.W. KAADIE, JR.
C.R.D. Eng. 65-17

CONFIDENTIAL

Security Classification

Launch Record # BC

IMPACT RECORD

U. S. NAVAL PROVING GROUND
DAHLGREN, VIRGINIA

IMPACT NO. 39-16

IMPACT DATE 7-21-51

NPG TEST NO. 1006

OBJECT IMPACT TEST FOR COMPARISON OF FUSING PIN
THICKNESS IN MK 166 ROCKET FUZEReference: NPG Itr. 11444-1444-134 dated 9-1-47
Reference: BuOrd Itr. NOL XI NPNCX-12-C12-1 dated 9-1-47
Task Assignment No. NPG-R-26-12-1-52 dated 4-11-47

PLATE TARGET

Gage 2" Class 575
Maker CHARLESIE
No. Group
Dimensions

OBLIQUITY 30°

PENETRATION COMPLETE
Thickness at impact 1/10
No. of impact on plate -
Dist. from nearest impact 13"
Dist. from near edges 51" and 1-46"
Impact area 6" X 4"
Spall: Front C Back O
Dish 1/4" Spur 1"
Cracks O
Punching (thrown) (started)
Back Button (thrown) (started)
Bulge C
Through opening 5" X 8 1/4"ROCKET
HEAD: Cal. 5" Type SEMI-RJ
Mark 2 Mod 3 No. 6128Wt. 47.00
Maker C5147 T. 20
Lot No. 27
Filler: Type KFA, Wt. -
Fuzes MK166-0-OT 8-51 H16
SPECIAL FUSING PIN EFFIC.
Boosters -
Wt. of head (as fired) 48.00MOTOR: Cal. 5" Mk. 2 Mod 3
Motor temp. 120° R.T. 58.90COMPLETE ROUND: Mark Mod
Wt. (as fired) 13.690
Wt. (burned)OTHER INFORMATION MOTOR (2)
ALN: R77168-1444-HA-45

LAUNCHER 10.50' ROCKET LAUNCHER

ROCKET PERFORMANCE

Flight Velocity, f/s: Striking 18.38 Residual
Fuze functioning
Explosive action (High Order) (Low Order) (None)
Distance of burst behind plate
Condition of recovered round
Head was in (EFFECTIVE) (INEFFECTIVE) conditionREMARKS: Fuze has live primers otherwise inert.
Head & fuze retained.Photo No. Signed F. W. Kacer
F. W. Kacer
C.D. 126, 7-21-51

CONFIDENTIAL

Type 1006-1 Rev. 1-3

IMPACT RECORD

U. S. NAVAL PROVING GROUND
DAHLGREN, VIRGINIAIMPACT NO. E9251IMPACT DATE 7-24-51NPG TEST NO CONE 1010

OBJECT Impact Test For Comparison of Firing Pin Fuze
 FAIRING 14 MK 166 ROCKET FUZES
 Reference: NPG - tr. Keep 31st 780. #34 dated 7 July 1951
 Reference: Round No. 1 in NPG-1 (754) dated 12-1-50 dated 7 July 1951
 Task Assignment No. NPG - 11131-12-1-50 dated 4 Aug. 4 1951

PLATE TARGET

Gage 3.0 Class STS
 Maker AMERIGE
 No. - Group -
 Dimensions -

OBLIQUITY 30°PENETRATION COMPLETEThickness at Impact 3.0No. of impact on plate -Dist. from nearest impact 13"Dist. from near edges .51" and 2.46"Impact area 6" X 9"Spall: Front 0 Back 0Dish 1/4" Spur. 1"Cracks 0Punching (thrown) (started) -Back Button (thrown) (started) -Bulge 0Through opening 5" X 8 1/4"ROCKET

HEAD: Cal. 5" Type SEMI-AF
 Mark 2 Mod 2 No 9687 Wt. 48.00
 Maker C36A ± .30
 Lot No. 37
 Filler: Type VERM Wt. -
 Fuze MK 166-D LOT E-51 L-46
STL FIRING PIN SPRING
 Boosters
 Wt. of head (as fired) 48.00

MOTOR: Cal. 5" Mk. 2 Mod 3
 Motor temp. 120° Wt. 89.60

COMPLETE ROUND: Mark - Mod -
 Wt. (as fired) 137.60
 Wt. (burned) -

OTHER INFORMATION PINTER (2) GRAIN
FIN: RIBBON - 1446 - FB-45

LAUNCHER 1050' EJECT LAUNCHER

ROCKET PERFORMANCE

Flight Velocity, f/s: striking 1856 Residual -
 Fuze functioning PERF
 Explosive action (High Order) (Low Order) (None)
 Distance of burst behind plate -
 Condition of recovered round Head was in (EFFECTIVE) (INEFFECTIVE) condition.

REMARKS: This round keyholed previous impact.
This round was not recovered.

Photo No. -

Signed F. W. Kasten
F. W. KASTEN,
7-24-51

CONFIDENTIAL Q. and R. Record 4-2
Approved by _____

IMPACT RECORD

U. S. NAVAL PROVING GROUND
DAHLGREN, VIRGINIAIMPACT NO. 39242IMPACT DATE 9-24-51NPG TEST NO. Code 1013

OBJECT IMPACT TEST FOR COMPARISON OF FIRING PIN SPRINGS IN MK 166 ROCKET FLIES

Reference: NPG Itr. Report 1013 dated 9-24-51
 Reference: BuOrd Itr. NOL TS NELLIX-1 (7-6) dated 9-24-51
 Task Assignment No. NKG-rc2B 12 1-52 dated 4-22-51 and 1951

PLATE TARGET

Gage 2.0 Class ST-S
 Maker CANNON-E
 No. 166 Group -
 Dimensions 105" x 10" x 2.6"

OBLIQUITY 30°PENETRATION COMPLETEThickness at impact 3.0No. of impact on plate 12Dist. from nearest impact 3.2"Dist. from near edges 7.6" and R. 46"Impact area 6" x 1"Spall: Front 0 Back 0Dish 1/4" Spur 2"Cracks 0

Punching (thrown) (started)

Back Button (thrown) (started)

Bulge 0Through opening 5" x 5 1/2"

ROCKET

HEAD: Cal. 5" Type SEMI-FI
 Mark 2 Mod 2 No. 818 Wt. 48.00
 Maker CSCA I. 30
 Lot No. 38
 Filler: Type VERNI Wt. -
 Fuze MK 16-B LOT 8-51 # 17
SPECIAL FIRING FUZE 38166
 Boosters -
 Wt. of head (as fired) 48.00

MOTOR: Cal. 5" Mk. 2 Mod 3
 Motor temp. 120° RT. 90.85

COMPLETE ROUND: Mark Mod
 Wt. (as fired) 13.85
 Wt. (burned) -

OTHER INFORMATION MOTOR (2) MK 16-B GRAIN
ALN: K7102-1444-HA-315

LAUNCHER 1050' ROCKET LAUNCHER

ROCKET PERFORMANCE

Flight MEAN
 Fuze functioning Striking 1837 Residual -
 Explosive action (High Order) (Low Order) (None)
 Distance of burst behind plate -
 Condition of recovered round Head was in (EFFECTIVE) (INEFFECTIVE) condition.

REMARKS: Fuze has live primers; otherwise intact.

Head & Fuze returned to Stock.

Photo No. -

Signed F.W. Kadlec
F.W. Kadlec
10-17-51 ES-12

(CONTINUE ON REVERSE SIDE)

1. part Record - 3

IMPACT RECORD

U. S. NAVAL PROVING GROUND
DAHLGREN, VIRGINIA

IMPACT NO. 39283

IMPACT DATE 9-24-51

NPG TEST NO. CODE 10703

OBJECT IMPACT TEST FOR COMPARISON OF FIRE PIN SPRINGS IN MK166 ROCKET FUZES

Reference: NPG ITR. T-60-A-14-1 dated 9-24-51
 Reference: BuOrd ITR. T-60-A-14-1 dated 9-24-51
 Task Assignment No. NAV-10703-12-1-52 dated 4 August 1951

PLATE TARGET

Gage 3" Class STS
 Maker CARNEGIE
 No. 16863 Group -
 Dimensions 12.5" x 27.6"

OBLIQUITY 30°

PENETRATION COMPLETE
 Thickness at impact 2.0
 No. of impact on plate 13
 Dist. from nearest impact 16"
 Dist. from near edge 5.9" and 8.48"
 Impact area 6" x 7"
 Spall: Front 0 Back 0.
 Dish 1/4" Spur 2".
 Cracks 0
 Punching (thrown) (started)
 Back Button (thrown) (started)
 Bulge 0
 Through opening 5" x 5 1/2"

ROCKET

HEAD: Cal. 5" Type SETM1-68
 Mark 2 Mod 3 No 3799 Wt. 48.00
 Maker C.R.M. I-30
 Lot No. 38
 Filler: Type VERIN. Wt. -
 Fuze: MK166-D LOT 8-51 #18
 SPECIAL FIRING PIN SPRING
 Boosters -
 Wt. of head (as fired) 48.00

MOTOR: Cal. 5" Mk. 2 Mod 3
 Motor temp. 110° Wt. 58.90 #

COMPLETE ROUND: Mark Mod
 Wt. (as fired) 136.90#
 Wt. (burned) -

OTHER INFORMATION MOTORS (2) GRAIN
 BLT: RMDA-1444-HA-45
 " - 1444 - " LAUNCHER 1050' ROCKET LAUNCHER

ROCKET PERFORMANCE

Flight Velocity, f/s: Striking 172.5 Residual -
 Fuze functioning
 Explosive action (High Order) (Low Order) (None)
 Distance of burst behind plate
 Condition of recovered round Head was in (EFFECTIVE) (INEFFECTIVE) condition in.

REMARKS: Fuze had live primers; otherwise inert.
 Head & fuze returned to NPG

Photo No. _____ Signed F. W. KASDORF
 F. W. KASDORF, Jr.
 CDR, ENR, Oct 12

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IMPACT RECORD

U. S. NAVAL PROVING GROUND
DAHLGREN, VIRGINIA

IMPACT NO. 392 84

IMPACT DATE 9-24-51

NPG TEST NO. SORF 1072

OBJECT IMPACT TEST FOR COMPARISON OF FIRING
FIN SPRINGS IN MK 166 ROCKET FUZEReference: NPG ltr. Report No. 934 dated
Reference: BuOrd ltr. NO 16 NEIN 36/X-1 (756) M 01209 dated 9 July 1951
Task Assignment No. NPG RC 166-12-1-53 dated 4 August 1951

PLATE TARGET

Gage 5" Class 375
Maker CARNEGIE
No. 106863 Group
Dimensions 102 1/2" X 276"

OBLIQUITY 30°

PENETRATION COMPLETE

Thickness at impact 2 1/2"

No. of impact on plate 14

Dist. from nearest impact 19"

Dist. from near edges 70" and 81 1/2"

Impact area 6" x 11"

Spall: Front 0 Back 0

Dish 1/4" Spur 1"

Cracks 0

Punching (thrown) (started)

Back Button (thrown) (started)

Bulge 0

Through opening 5" X 5 1/2"

ROCKET

HEAD: Cal. 5" Type SE201-AP
Mark 2 Mod 2 No 8944 Wt. 48.00#
Maker 150-A I. 30
Lot No. 38
Filler: Type VERDI. Wt.
Fuze MK 166-0 10F 8-57 #
SPECIAL FIRING FIN SPRING
Boosters
Wt. of head (as fired) 48.16#MOTOR: Cal. 5" Mk. 2 Mod 3
Motor temp. 130° Wt. 89.35#COMPLETE ROUND: Mark Mod
Wt. (as fired) 136.35#
Wt. (burned)OTHER INFORMATION MOTORS (2) GRAN
H/L: 6.500 - 1440- HA-45
" " - 1418- HA-45
LAUNCHER 1050 ROCKET LAUNCHER

ROCKET PERFORMANCE

Flight Velocity, ft/sec striking 16.7 Residual

Fuze functioning

Explosive action (High Order) (Low Order) (None)

Distance of burst behind plate

Condition of recovered round

Head was in (EFFECTIVE) (INDEFFECTIVE) condition.

REMARKS: Fin fins (the primary) other wise intact.

Head & fins followed the dish

Photo No. Signed F. W. Kassdor

F. W. KASSDOR
OCT 1 1951

CONFIDENTIAL

Security Information - Part Record # 35

IMPACT RECORD

U. S. NAVAL PROVING GROUND
DAHLGREN, VIRGINIA

IMPACT NO. 39298

IMPACT DATE 9-28-51

NPG TEST NO. Code 1C9C3

OBJECT IMPACT TEST FOR COMPARISON OF FIRING PIN SPRINGS IN MK 166 ROCKET FUZES.

Reference: NPG 1tr. Report 720 934 dated
 Reference: Board 1tr. NOL-H-NP/NOL/XI-1756 Ser 01209 dated 9 July 1951
 Task Assignment No. NPG-8226-12-1-52 dated 4 Aug 1951

PLATE TARGET

Gage 1¹/₂" Class STS
 Maker U.S. STEEL
 No. D137640 Group 0-526-810
 Dimensions 88" x 250"

OBLIQUITY 30°

PENETRATION COMPLETE
 Thickness at impact 1¹/₄"
 No. of impact on plate 3
 Dist. from nearest impact 77"
 Dist. from near edges 1¹/₄" and 1¹/₂"
 Impact area 5" X 6"
 Spall: Front 0 Back 2
 Dish 1¹/₄" Spur 3
 Cracks 0
 Punching (thrown) (started)
 Back Button (thrown) (started)
 Bulge 0
 Through opening 5" X 5¹/₂"

ROCKET

HEAD: Cal. 5" Type SEMI-AP
 Mark 2 Mod 2 No 8785 Wt. 48.00
 Maker CSCA ± .30
 Lot No. 38
 Filler: Type VERTM. wt. —
 Fuze MK 166 LOT 3E-51 #47
 (ANV. FIRING PIN SPRING)
 Boosters inert live primed
 Wt. of head (as fired) 48.00

MOTOR: Cal. 5" Mr. 2 Mod 3
 Motor temp. 120° UT. 89.80

COMPLETE ROUND: Mark Mod
 Wt. (as fired) 139.80
 Wt. (burned)

OTHER INFORMATION MOTORS (2) GRAIN
 RTMCA-1411-HB-45
 - 226 -
 LAUNCHER 1050' R. LAUNCHER

ROCKET PERFORMANCE

Flight Velocity, f/s: Striking 1787 Residual
 Fuze functioning
 Explosive action (High Order) (Low Order) (None)
 Distance of burst behind plate
 Condition of recovered round
 Head was in (EFFECTIVE) (IMPERFECT) condition.

REMARKS: Head & fuze returned to N.O.

Photo No.

Signed F.W. Kasdorf
 F.W. KASDORF, En
 NAVD. ENIG. 65-12

CONFIDENTIAL

Impact Record #36

Security Information

IMPACT RECORD

U. S. NAVAL PROVING GROUND
DAULGREN, VIRGINIA

IMPACT N. 39297

IMPACT DATE 9-24-51

NPG TEST NO. CODE 10903

OBJECT IMPACT TEST FOR COMPARISON OF FLAMING FUSE

Reference: NPG 100-7 dated 7-16-51
Reference: ~~none~~ NOL No. NPNOL/XI-1(756) Ser 0120 dated 9 July 1951
Task Assignment No. NPG-RE20-1E-1-52 dated 4 Aug 1951

PLATE TARGET

Type 1.50 Class ITS
Maker 1/8 STEEL
No. 6132440 Group U-246-910
Dimensions 88" X 250"

OBliquity 30°

PENETRATION COMPLETE
Thickness at Impact 1/4"
No. of impact on plate 4
Dist. from nearest impact 5"
Dist. from near edge 42" and 1-138"
Impact area 5" X 6"
Spall: Front C Back O
Dish 1/4" Spur 3"
Cracks O
Punching (thrown) (started)
Back Button (thrown) (started)
Bulge O
Through opening Key hole

FUSE

HEAD: Cal. 5" Type SEMI-AF
Mark 2 Mod 2 No 8983 Wt. 48.00
Maker CSCA
Lot No. 38
Filler: Type PERM. Wt.
Fuzes DIK 166 Lot 8-51
SPECIAL FLAMING FUSE #21
Boosters
Wt. of head (as fired) 47.00MOTOR: Cal. 5" Mk. 2 Mod 2
Motor temp. 130° WT. 58.85#COMPLETE ROUND: Mark Mod
Wt. (as fired) 15.655#
Wt. (burned)OTHER INFORMATION MOTORS (2) GRAIN
ALN: 1/2" DP-1444-AA-45
" " 226-
LAUNCHER 1050' R. LAUNCHER

ROCKET PERFORMANCE

Flight Velocity, f/s: striking 1743 Residual
Fuse functioning
Explosive action (High Order) (Low Order) (None)
Distance of burst behind plate
Condition of recovered round Intact
Head was in (EFFECTIVE) (INEFFECTIVE) condition.

REMARKS: Head & fuse returned to NPG.

This round keyholed previous impact

Photo No.

Signed F. W. Kaasday
F. W. KAASDAY, JR.
OCT 26 1951

CONFIDENTIAL - Part 1 Serial #31

IMPACT RECORD

U. S. NAVAL PROVING GROUND
DAULGREN, VIRGINIAIMPACT NO. 3930CIMPACT DATE 9-28-51NPG TEST NO. COCF 10703OBJECT IMPACT TEST FOR COMPARISON OF FIRING
PIE SPECIES IN MK 166 ROCKET FUZESReference: NPG ITR. 7-1-47-1947 dated 7-1-47-1947Reference: Board ITR. AGC ITR. NPI/NOL/XT-1/756 Ser 01209 dated 9 July 1951Task Assignment No. MIC-8020-12-1-72 dated 4 Aug 1951

PLATE TARGET

Gage 1.50 Class STS
 Maker O.S. STEEL
 No. 0132640 Group O-526-810
 Dimensions 88" X 250"

OBLIQUITY 30°

PENETRATION COMPLETE
 Thickness at Impact 1.45
 No. of impact on plate 5
 Dist. from nearest impact 14"
 Dist. from near edges .35" and 1.199"
 Impact area 6" X 11"
 Spall: Front 0 Back 0
 Dish .14" Spur 2"
 Cracks 0
 Punching (thrown) (started) 0
 Back Button (thrown) (started) 0
 Bulge 0
 Through opening 5" X .8"

ROCKET

HEAD: Cal. 5" Type SEN'1-AF
 Mark 2 Mod 2 No. 8940 Wt. 48.00
 Maker CSCA +.30
 Lot No. 38
 Filler: Type VER 701, Wt. —
 Fuze MK 166-A LOT 9-51 #48
CONVENT. FIRING PIE SPECIES
 Boosters Inert - live primers
 Wt. of head (as fired) 48.00 #

MOTOR: Cal. 5" Mk. 2 Mod 3
 Motor temp. 120° F.T. 88.85

COMPLETE ROUND: Mark Mod
 Wt. (as fired) 136.85 #
 Wt. (burned) —

OTHER INFORMATION MOTORS(2) GRAIN
411: R715A-1444-HA-45

LAUNCHER 1050' ROCKET LAUNCHER

ROCKET PERFORMANCE

Flight Velocity, f/s: striking 1928 Residual

Fuze functioning —
 Explosive action (High Order) (Low Order) (None)
 Distance of burst behind plate —
 Condition of recovered round Intact
 Head was in (EFFECTIVE) (INERT) condition

REMARKS: Head fuze returned to NO.

Photo No. — Signed F. W. KASDORF

F. W. KASDORF
AGC: EIR. 8-12

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IMPACT RECORD

U. S. NAVAL PROVING GROUND
DAHLGREN, VIRGINIA

IMPACT NO. 29301

IMPACT DATE 2-25-51

NPG TEST NO. CADE 10701

OBJECT IMPACT TEST FOR COMPARISON OF FIRING
PIN SPRINGS IN MK 166 ROCKET FUZESReference: NPG Itr. Report No 934 dated
Reference: Board Itr. NOL No. NP/NOL/X-1/3er 01209 dated 7-9-51
Task Assignment No. NPG-Re 2b - 12-1-52 dated 8-4-51PLATE TARGETGage 1.50 Class STS
Maker U.S. STEEL
No. 01321640 Group D-526-810
Dimensions 88" X 250"

OBLIQUITY 30°

PENETRATION COMPLETE
Thickness at impact 1.46
No. of impact on plate 6
Dist. from nearest impact 14"
Dist. from rear edges 35" and 1-199"
Impact area 6" X 11"
Spall: Front 0 Back 0
Dish 1/4" Spur 2"
Cracks 0
Punching (thrown) (started)
Back Button (thrown) (started)
Bulge
Through opening 5" X 53"ROCKETHEAD: Cal. 5" Type SENI. AR
Mark 2 Mod 2 No. 8925 Wt. 48.00#
Maker CSCA F-30
Lot No. 38
Filler: Type VERZN. Wt. -
Fuzes MK 166-0 Lot 8-51 #21
SPECIAL FIRING PIN SET 18.1-
Boosters inert - live primer
Wt. of head (as fired) 48.00#MOTOR: Cal. 5" Mk. 2 Mod 3
Motor temp. 120° Wt. 89.00#COMPLETE ROUND: Mark Mod
Wt. (as fired) 137.00#
Wt. (burned)OTHER INFORMATION MOTORS (2) GRAIN
FLN: RMDA-1411-HA-45

LAUNCHER 1050' ROCKET LAUNCHER

ROCKET PERFORMANCE

Flight Velocity, f/s: striking 1612 Residual
Fuze functioning
Explosive action (High Order) (Low Order) (None)
Distance of burst behind plate
Condition of recovered round
Head was in (EFFECTIVE) (INEFFECTIVE) condition.

REMARKS: Head & fuze returned to NPG

Photo No. _____

Signed F.W. Rasdorf
F.W. RASDORF, S.H.
C.R.D. ENGR. 6-5-12

Impact Record # 37

IMPACT RECORD

U. S. NAVAL PROVING GROUND
DAHLGREN, VIRGINIA

IMPACT N. 39302

IMPACT DATE 9.25-51

NPG TEST NO. CODE 10903

OBJECT IMPACT TEST FOR COMPARISON OF FIRING PIN SPRINGS IN MK 166 ROCKET FUSESReference: NPG ~~Ref.~~ R-1147 No 934 dated
Reference: ~~Ref.~~ NOL TM NPM/NOL/XI-1/SER 01209 dated 7-2-51
Task Assignment No. NPE-R620-12-1-52 dated 8-4-51

PLATE TARGET

Gage 1.50 Class STS
Maker U.S. STEEL
No. 6132640 Group Q-326-810
Dimensions 88" X 250"

OBLIQUITY 30°

PENETRATION COMPLETE

Thickness at impact 1.46

No. of impact on plate 7

Dist. from nearest impact 26"

Dist. from near edge .40" and L-1.59"

Impact area 6" X 11"

Spall: Front 0 Back 0

Dish 1/4" Spur 3"

Cracks 0

Punching (thrown) (started)

Back Button (thrown) (started)

Bulge 0

Through opening 5" X 5 1/2"

ROCKET

HEAD: Cal. 5" Type SEMI-AF
Mark 2 Mod 2 No 8744 Wt. 48.00#
Maker CSCA #.30
Lot No. 38
Filler: Type VERM, Wt. —
Fuzes MK 166-D LOT 8-51 #49
CONVENT. FIRING PIN SPRINGS
Boosteriment live Primers #
Wt. of head (as fired) 48.00#MOTOR: Cal. 5" Mk. 2 Mod 3
Motor temp. 120° RT. 88.15COMPLETE ROUND: Mark Mod
Wt. (as fired) 13.6.15#
Wt. (burned) —OTHER INFORMATION MOTORS (?) FAIR
ALN: R7009-226-HA-45

LAUNCHER 10.50' R. LAUNCHER

ROCKET PERFORMANCE

MEAN

Velocity, f/s: striking 1667 Residual —

Flight

Fuze functioning

Explosive action (High Order) (Low Order) (None)

Distance of burst behind plate

Condition of recovered round

Head was in (EFFECTIVE) (INEFFECTIVE) condition.

REMARKS: Head not recovered

Photo No. *10903*

Signed

F. W. Kasdorf
F. W. KASDOFF
ORD. E216, GS-12*10903**Impact Record #40*

IMPACT RECORD

U. S. NAVAL PROVING GROUND
DAHLGREN, VIRGINIAIMPACT NO. 39304IMPACT DATE 10-1-51NPG TEST NO. CODE 10903

OBJECT IMPACT TEST FOR COMPARISON OF FIRING PIN SPRINGS IN MK 166 ROCKET FLIRES.

Reference: NPG 1tr. Test no. 934 dated 7-9-51
 Reference: ~~BuOrd~~ NOL NP/NOL/X-1/SCHE202 dated 7-9-51
 Task Assignment No. NPG-R02.D-12-1-52 dated 8-4-51

PLATE TARGET

Gage 1.50 Class STS
 Maker U.S. STEEL
 No. 6132640 Group U-S26-810
 Dimensions 88" X 250"

OBLIQUITY 30°

PENETRATION COMPLETE
 Thickness at impact 1.46
 No. of impact on plate 8
 Dist. from nearest impact 14"
 Dist. from near edges .28" and 1.15"
 Impact area 6" X 13"
 Spall: Front 0 Back 0
 Dish 1/4" Spur 4"
 Cracks 0
 Punching (thrown) (started)
 Back Button (thrown) (started)
 Bulge 0
 Through opening 5 X 5 1/2"

ROCKET

HEAD: Cal. 5" Type SEMI-OF
 Mark 2 Mod 2 No. 89621 Wt. 145.00*
 Maker CSCA Z 1.30
 Lot No. 38
 Filler: Type VERM, Wt. —
 Fuze MK 166 LOT 8-51 #22
SPECIAL FIRING PIN SPRING
 Boosters inert — live primers
 Wt. of head (as fired) 48.00*

MOTOR: Cal. 5" Mk. 2 Mod 3
 Motor temp. 120° Wt. 89.40

COMPLETE ROUND: Mark Mod
 Wt. (as fired) 137.40*
 Wt. (burned) —

OTHER INFORMATION MOTORS (2) GRAIN
ALN: R200A-1444-HA-45
" - 226 - "
 LAUNCHER 1050' ROCKET LAUNCHER

ROCKET PERFORMANCE

Flight Velocity, f/s: 1000 Mean 1774 Residual —
 Fuze functioning —
 Explosive action (High Order) (Low Order) (None)
 Distance of burst behind plate —
 Condition of recovered round Intact
 Head was in (EFFECTIVE) (INOPERATIVE) condition.

REMARKS: Head & Fuze recovered and returned to NOL

Photo No. —

Signed F. W. Kasdorf
F.W.KASDORF th
CRD. FDG. 6-14

IMPACT RECORD

U. S. NAVAL PROVING GROUND
DAHLGREN, VIRGINIA

IMPACT NO. 39305

IMPACT DATE 10-1-51

NPG TEST NO. CODE 18953

OBJECT IMPACT TEST FOR COMPARISON OF FIRING
PIN SPRINGS IN MK 166 ROCKET FUZESReference: NPG Itr. Report 166-1A, Q34 dated
Reference: Board Itr. NOL Itr. AP/NOL XI-1 Ser 01209 dated 7-9-51
Task Assignment No. NPG-Re2b-12-1-51 dated 8-4-51

PLATE TARGET

Gage 1.50 Class STS
Maker U.S. STEEL
No. 0132640 Group 0-386-810
Dimensions 88" X 250"

OBLIQUITY 30°

PENETRATION COMPLETE

Thickness at impact 1.46

No. of impact on plate

Dist. from nearest impact 31"

Dist. from near edge, 25" and L-191"

Impact area 6" X 8"

Spall: Front 0 Back 0

Dish 1/4" Spur 2"

Cracks 0

Punching (thrown) (started)

Back Button (thrown) (started)

Bulge 0

Through opening 5" X 7/12"

ROCKET

HEAD: Cal. 5" Type SEMI-AP
Mark 2 Mod 2 No. 8152 Wt. 48.00
Maker U.S.A. ± .30
Lot No. 38
Filler: Type VERB, wt.
Size: MK 166-0 LOT 8-51 #50
CONVENT. FIRING PIN SPRING
Booster insert - type primers
Wt. of head (as fired) 48.00#MOTOR: Cal. 5" Mk. 2 Mod 3
Motor temp. 126° UT. 89.00#COMPLETE ROUND: Mark Mod
Wt. (as fired) 134.00#
Wt. (burned)OTHER INFORMATION MOTORS (2) GRAIN
ALN: R7109-1411-HA-45
" " - 1444-"
LAUNCHER 1050' ROCKET LAUNCHER

ROCKET PERFORMANCE

Flight Velocity, f/s: striking 1843 Residual

Fuze functioning

Explosive action (High Order) (Low Order) (None)

Distance of burst behind plate

Condition of recovered round

Intact Head was in (EFFECTIVE) (INEFFECTIVE) cond'n

REMARKS: Head & fuze recovered and returned to NOL.

Photo No. _____

Signed F. W. Kassdorff
F.W.KASSDORFF, Lt
ORD. ENG. GS-12

CONFIDENTIAL

SECURITY INFORMATION

Impact Record # 43.

IMPACT RECORD

U. S. NAVAL PROVING GROUND
DAHLGREN, VIRGINIAIMPACT NO. 39306IMPACT DATE 10-1-51NPG TEST NO. CODE 10903OBJECT IMPACT TEST FOR COMPARISON OF FLAING.
P11Y SP'EWS IN MK 166 ROCKET FUZE'SReference: NPG itr. Keyart 74.9 34 dated 7-9-51
Reference: ~~Board~~ itr. NOL No. NPL/NOL/XI-1/Sec 01209 dated 7-9-51
Task Assignment No. NPG-R2B-12-1-52 dated 8-4-51

PLATE TARGET

Gage 1.50 Class STS
Maker U.S. STEEL
No. 013264C Group U-326-810
Dimensions 8" X 250"OBLIQUITY 30°PENETRATION COMPLETEThickness at impact 1.46No. of impact on plate 10Dist. from nearest impact 16"Dist. from near edges .42" and 1.14"Impact area 6" X 8"Spall: Front 0 Back 0Dish .14" Spur 2"Cracks 0

Punching (thrown) (started)

Back Button (thrown) (started)

Bulge ?Through opening key hole

ROCKET

HEAD: Cal. 5" Type SEMI-HF
Mark 2 Mod 3 Rocket .48.00 #
Maker CSCA Lot No. 38
Filler: Type VERM.WT.
Fuze MK 166 LOT 8-51 #23
SPECIAL FIRING PIN SPRINGS
Boosters/inert Primers live
Wt. of head (as fired) .48.00 #MOTOR: Cal. 5" Mk. 2 Mod 3
Motor temp. 120° C 17.87.90 #COMPLETE ROUND: Mark Mod
Wt. (as fired) 135.40 #
Wt. (burned) "OTHER INFORMATION MOTORS (2) 107K 18-0
HEAD: 87MM - 1444-44-45LAUNCHER 1050' ROCKET LAUNCHER

ROCKET PERFORMANCE

Flight Velocity, f/s: striking 1613 Residual "
Fuze functioning MEAN
Explosive action (High Order) (Low Order) (None)
Distance of burst behind plate "
Condition of recovered round Intact
Head was in (EFFECTIVE) (INFEFFECTIVE) condition.REMARKS: This round keyholed previous impact.
Head & fuze returned to N.C.Photo No. 10217Signed: F. W. Kasdorf
F. W. KASDORF, Lt.
ORD. ENG. GS-12

CONFIDENTIAL

Impact Record # 43

IMPACT RECORD

U. S. NAVAL PROVING GROUND
DAHLGREN, VIRGINIA

IMPACT NO. 343 : 8

IMPACT DATE 10-2-51

NPG TEST NO. Code 10703

OBJECT IMPACT TEST FOR COMPARISON OF FIXING PIN SPRINGS IN MK 166 ROCKET FUZES

Reference: NPG ATF 7-4-51 dated
Reference: Board ATF NOL HH-NP/NOL/XI-1/Ser 01209 dated 7-9-51
Task Assignment No. NPG - Re2b - 12-1-52 dated 8-4-51

PLATE TARGET

Gage 1.50 Class STS
Maker U.S. STEEL
No. C132640 Group C-526-810
Dimensions 78" X 750"

OBLIQUITY 30°

PENETRATION COMPLETE
Thickness at impact 1.46
No. of impact on plate 11
Dist. from nearest impact 27"
Dist. from near edges 166" and 182"
Impact area 6" X 8"
Spall: Front 0 Back 0
Dish 1/4" Spur 2"
Cracks
Punching (thrown) (started)
Back Button (thrown) (started)
Bulge 0
Through opening 5" X 0 1/2"

ROCKET

HEAD: Cal. 5" Type SF2011-AF
Mark 2 Mod 2 No. 8933 Wt. 48.00
Maker CSCA
Lot No. 38
Filler: Type VERH. Wt. --
Fuzes MK 166-A LOT 8-51 H-51
CONVENT. FIZIE 1/4" FUSE
Boosters Inert Primers live
Wt. of head (as fired) 48.00 #MOTOR: Cal. 5" Mk. 2 Mod 3
Motor temp. 120° W.T. 89.80 #COMPLETE ROUND: Mark Mod
Wt. (as fired) 137.80 #
Wt. (burned) --OTHER INFORMATION MOTORS (2) GRAIN
HUY: A7100-1444-HA-45
" " - 926-11-45
LAUNCHER 1050' ROCKET LAUNCHER.

ROCKET PERFORMANCE

Flight Velocity, f/s: STRIKING 166.2 Residual --
Fuze functioning
Explosive action (High Order) (Low Order) (None)
Distance of burst behind plate
Condition of recovered round
Head was in (EFFECTIVE) (INOPERATIVE) condition.

REMARKS: Head & fuze recovered and returned to NOL

Photo No. _____

Signed F. W. Kassdorf
F.W. KASSDORF, R.H.
CHIEF, E-1CONFIDENTIAL
Security 44

Impact Record # 44

IMPACT RECORD

U. S. NAVAL PROVING GROUND
DAHLGREN, VIRGINIAIMPACT NO. 39309IMPACT DATE 10-2-51NPG TEST NO Code 10963OBJECT IMPACT TEST FOR COMPARISON OF FIRING
PIN FIRES IN MK 166 ROCKET FIRESReference: NPG -itr. Report 7-11-45 dated 7-11-45
Reference: BuOrd Rep. NOL Th NPMOLX-1-1 Ser 0209 dated 7-9-51
Task Assignment No. NPG-RE26-12-1-52 dated 8-4-51PLATE TARGETGage 1.50 Class STS
Maker U.S. STEEL
No. A132640 Group U-526-310
Dimensions 88" X 250"ROCKETHEAD: Cal. 5" Type SEMAI-HP
Mark 2 Mod 2 No. 802 Wt. 48.00#
Maker ESPA ± .30
Lot No. 38
Filler: Type VFRM Wt. -
Fuzes MK 166-0 LOT 4-51 #24
SPECIAL FIRING PIN 56318-E
Boosters met — Pins live
Wt. of head (as fired) 48.00#OBLIQUITY 30°MOTOR: Cal. 5" Mk. 2 Mod 3
Motor temp. 121° UT. 89.40#PENETRATION COMPLETE
Thickness at impact 1 1/4"
No. of impact on plate 12
Dist. from nearest impact 12"
Dist. from near edges 7.65" and L-19"
Impact area 5" X 6"
Spall: Front 0 Back 0
Dish 1/4" Spur 2"
Cracks 0
Punching (thrown) (started)
Back Button (thrown) (started)
Bulge 0
Through opening 5" X 5 1/2"COMPLETE ROUND: Mark Mod
Wt. (as fired) 139.40#
Wt. (burned) -OTHER INFORMATION MOTOR'S (2) MK 166-0
ALN: 67109-226-H-45
" " 1444-HA-45
LAUNCHER 1050 ROCKET LAUNCHERS

ROCKET PERFORMANCE

Flight Velocity, f/s: Striking 1578 Residual -
Fuze functioning MEAN
Explosive action (High Order) (Low Order) (None)
Distance of burst behind plate -
Condition of recovered round Intact
Head was in (EFFECTIVE) (INTERFERED) condition.

REMARKS: Head & fuze recovered and returned to NPG

Photo No. -Signed F. W. Klauder
F.W. KLAUDER, R.D.
ORD. ENG. 65-12

CONFIDENTIAL

(Security Information)

Impact Record #45

IMPACT RECORD

U. S. NAVAL PROVING GROUND
DAHLGREN, VIRGINIAIMPACT NO. 39310IMPACT DATE 10-2-51NPG TEST NO LOCE 13903

OBJECT IMPACT TEST FOR COMPARISON OF FIRING
DIN SEEKS IN MK 166 ROCKET FUZES
 Reference: NPG ITR. 10-2-51 #34 dated 10-2-51
 Reference: BUORE ITR. NO. 14 NOV/1/SER 01209 dated 7-9-51
 Task Assignment No. NPG - R22B-12-1-52 dated 8-4-51

PLATE TARGET

Gage 1.50 Class STS
 Maker DIS. STEEL
 No. 1132640 Group II-S26-81C
 Dimensions .88" x .50"

OBLIQUITY 30°PENETRATION COMPLETEThickness at impact .166"No. of impact on plate 13Dist. from nearest impact .24"Dist. from near edges .91" and 1.216"Impact area 6" x 2"Spall: Front 0 Back 0Dish 1/4" Spur 4"Cracks 0

Punching (thrown) (started)

Back Button (thrown) (started)

Bulge 0Through opening 5" x 3"ROCKET

HEAD: Cal. 5" Type SEMI-AF
 Mark 2 Mod 2 No 8978 Wt. 4.8.00

Maker CSCA ±.30
 Lot No. 39Filler: Type VERIN, Wt. —
 Fuze MK 166-0 LOT 8-51 #52CONVENT. FIRING DIA. 5.84 MMBoosters inert Primers noneWt. of head (as fired) 7.4.00 ±.00MOTOR: Cal. 5" Mk. 2 Mod 2
 Motor temp. 130° B.T. 38.65COMPLETE ROUND: Mark 2 Mod 2
 Wt. (as fired) 13.6.65 ±.00
 Wt. (burned) —

OTHER INFORMATION MOTOR'S (2) GRAIN

ALN: KNECHT-226-H-HS

" -1444-HA-45

LAUNCHER 1050' ROCKET LAUNCHER

ROCKET PERFORMANCE

Flight Velocity, f/s: 1697 Residual —Fuze functioning DEPOT

Explosive action (High Order) (Low Order) (None)

Distance of burst behind plate —Condition of recovered round IntactHead was in (EFFECTIVE) (INACTIVE) condition.

REMARKS: Head & fins recovered and returned to HQ

Photo No. — Signed F. W. KaehnF. W. KAEHN, E.C.
E.F.E.T.G.

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Security Information

Impact Record #46

IMPACT RECORD

U. S. NAVAL PROVING GROUND
DAHLGREN, VIRGINIAIMPACT NO. 39311IMPACT DATE 10-2-51NPG TEST NO. C-001 18903OBJECT IMPACT TEST FOR COMPARISON OF FIRING PIN SPRINGS IN MK 166 ROCKET PILOTSReference: NPG ITR. 10-2-51 dated 10-2-51Reference: ~~Navord ITR.~~ NOL ITR = NPI(NOL/XI-1)502 01209 dated 7-9-51Task Assignment No. NPG - RERB-12-1-51 dated 8-4-51

PLATE TARGET

Gage 1.50 Class STS
Maker U.S. STEEL
No. 613264D Group 1-526-810
Dimensions 88" X 250"OBLIQUITY 30°PENETRATION COMPLETEThickness at impact 1.46No. of impact on plate 14Dist. from nearest impact 16"Dist. from near edges .60 and 1.224"Impact area 6" X 8"Spall: Front 0 Back 0Dish 1/4" Spur 2"Cracks 0Punching (thrown) (started) 0Back Button (thrown) (started) 0Bulge 0Through opening 5" X 7 1/2"HEAD: Cal. 5" Type 55701-HF
Mark 2 Mod 2 No 8943 Wt. 42.00
Maker 15CP ± .30
Lot No. 24
Filler: Type YERIN, Wt. —
Fuzes MK 166-A LOT 8-51 #25
SPECIAL FIRING PIN SPRINGS
Boosters met - persons live
Wt. of head (as fired) 42.00MOTOR: Cal. 5" Mk. 2 Mod 2
Motor temp. 100° U.T. 89.45COMPLETE ROUND: Mark Mod
Wt. (as fired) 137.45
Wt. (burned) —OTHER INFORMATION MOTOR: (E) 11R19-0
BLN: R200A-1411-H-45
LAUNCHER 1050' ROCKET LAUNCHER

ROCKET PERFORMANCE

Flight STRIKE Velocity, f/s: 1677 Residual —
Fuze functioning —
Explosive action (High Order) (Low Order) (None) —
Distance of burst behind plate —
Condition of recovered round Intact
Head was in (EFFECTIVE) (EFFECTIVE) condition.

REMARKS: Head & fuze returned to NOL

Photo No. —Signed F. W. Kasdorf
F. W. KASDORF, Jr.
OFFICE ENG. GS-12

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Security classification stamp on Impact Record # 41

IMPACT RECORD

U. S. NAVAL PROVING GROUND
DAHLGREN, VIRGINIAIMPACT NO. 39312IMPACT DATE 10-5-51NPG TEST NO. Code 10913OBJECT Impact Test For Configuration of EIKING
PIN SPRINGS IN THE ROCKET FIZZReference: NPG Ltr. 7-24-51, T-70-934

dated

Reference: ~~None~~ Ltr. NAE-HA-NP/NOL/XI-1/SEL 01204dated 7-9-51Task Assignment No. NPG-RB2D-12-1-51dated 8-4-51

PLATE TARGET

Gage 1/16 Class 37S
 Maker 115 STEEL
 No. A13264A Group 11.336-310
 Dimensions 88" X 250"

OBLIQUITY 30°PENETRATION COMPLETEThickness at impact 1/46No. of impact on plate 15Dist. from nearest impact 18"Dist. from near edges .67" and 2.24"Impact area 6.169"Spall: Front 0 Back 0Dish 1/4" Spur 2"Cracks 0

Punching (thrown) (started)

Back Button (thrown) (started)

Bulge 0Through opening 5" X 5 1/2"

ROCKET

HEAD: Cal. 5" Type SEHII-AP
 Mark 2 Mod 2 No. 5769 Wt. 48.00 lbs
 Maker ESCA Lot No. 37
 Filler: Type VERTI, Wt. -
 Fuze MK166-0 LOT 8-51 #53
Conical EIKING PIN SPRINGS
 Boosters None - Booster live
 Wt. of head (as fired) 48.00 lbs

MOTOR: Cal. 5" Mk. 2 Mod 2
 Motor temp. 136° I.T. 90.60 °F

COMPLETE ROUND: Mark Mod
 Wt. (as fired) 13.860 lbs
 Wt. (burned) -

OTHER INFORMATION MOTORS(2) MK166
PN: KMUR-226-H-A5
" 1444-HA-45
 LAUNCHER 1050' ROCKET LAUNCHER

ROCKET PERFORMANCE

Flight High Velocity, f/s: Striking 1700 Residual -Fuze functioning -

Explosive action (High Order) (Low Order) (None)

Distance of burst behind plate -Condition of recovered round FracturedHead was in (EFFECTIVE) (~~EFFECTIVE~~) condition.REMARKS: Head ~~was~~ returned to NSLPhoto No. -Signed F. W. Kastorff
F. W. KASTORFF, Jr.
CRD, EIK, 63-12-CONFIDENTIAL
 Security classification Impact Record # 48

IMPACT RECORD

U. S. NAVAL PROVING GROUND
DAHLGREN, VIRGINIAIMPACT NO. 39313IMPACT DATE 10-2-51NPG TEST NO. CODE10903OBJECT IMPACT TEST FOR COMPARISON OF FIRING
PIN SPRINGS IN THE IEE ROCKET FUSE

Reference: NPG 1tr. R-10903 Mk 934 dated 8-7-51
 Reference: ~~Board~~ 1tr. NOL NP/NOL/XI-1/SC-21209 dated 8-7-51
 Task Assignment No. NPG - RC2b - 12-1-52 dated 8-4-51

PLATE TARGET

Gage 1.50 Class 575
 Maker U.S. STEEL
 No. A13-1640 Group D-526-810
 Dimensions 68 1/2 x 58"

OBLIQUITY 30°PENETRATION COMPLETEThickness at impact 1 1/4"No. of impact on plate 16Dist. from nearest impact 41"Dist. from near edges .76" and .108"Impact area 6" x 17"Spall: Front 0 Back 0Dish 1/4" Spur 2"Cracks 0Punching (thrown) (started) 0Back Button (thrown) (started) 0Bulge 0Through opening 5" x 5"ROCKET

HEAD: Cal. 5" Type SEMI-AP
 Mark 2 Mod 2 No. 8999 Wt. 48.00 #
 Maker CSCA Lot No. 38
 Filler: Type VERB, Wt. -
 Fuze MK166-0 Lot 8-51 #26
SPECIAL FIRING PIN SPRING
 Boosters inert Primers live
 Wt. of head (as fired) 48.00 #

MOTOR: Cal. 5" Mk. 2 Mod 3
 Motor temp. 120° INT. 89.70 #

COMPLETE ROUND: Mark Mod
 Wt. (as fired) 139.70 #
 Wt. (burned) -

OTHER INFORMATION MOTORS(2) N.E.R.C.
PN: RM08-1444-HA-145

LAUNCHER 105" ROCKET LAUNCHER

ROCKET PERFORMANCE

Flight Velocity, f/s: 11,400 Residual 1939
 Fuze functioning 1
 Explosive action (High Order) (Low Order) (None)
 Distance of burst behind plate -
 Condition of recovered round Intact
 Head was in (EFFECTIVE) (INEFFECTIVE) condition.

REMARKS: Head & fuze returned to NOL

Photo No. _____

Signed F. W. Kaidorf
F.W. KAIDORF 2d
C.D. P.T.E. GS-12
 Company Record # 49

CONFIDENTIAL

Security Information

IMPACT RECORD

U. S. NAVAL PROVING GROUND
DAHLGREN, VIRGINIAIMPACT NO. 39314IMPACT DATE 10-2-51NPG TEST NO. CODE 10903OBJECT IMPACT TEST FOR COMPLETENESS OF FIRING
SPIN SAW BLADE IN THE 105' ROCKET TUBE

Reference: NPG Inter. Report No. 320, Q34 dated

Reference: DODR Inter. No. 2144, NP/106/XI-1/SC-21209 dated

Task Assignment No. NPG - RC2b - 1B-1-52 dated7-9-518-4-51

PLATE TARGET

Gage 1.50 Class STS
Maker 1151 STEEL
No. 0122640 Group U.S.26-810
Dimensions 86" X 50"OBLIQUITY 30°PENETRATION COMPLETE
Thickness at Impact 1.46
No. of impact on plate 17
Dist. from nearest impact 22"
Dist. from near edges .64" and .92"
Impact area 6" X 8"
Spall: Front 0 Back 0
Dish 1/4" Spur 1/2"
Cracks 0
Punching (thrown) (started)
Back Button (thrown) (started)
Bulge 0
Through opening 5" X 5 1/2"HEAD: Cal. 5" Type 5E44-54
Mark 2 Mod 2 No. 5847 Wt. 17.00
Maker C50 Lot No. 38Filler: Type VERM, Wt. —
Fuzes MK 166-0 LOT 8-51 #54
CONVENT FIRING PIN SPRING
Boosters inert — Priming line
Wt. of head (as fired) 48.00 #MOTOR: Cal. 5" Mk. 2 Mod 3
Motor temp. 120° WT. 88.55 #COMPLETE ROUND: Mark Mod
Wt. (as fired) 136.55 #
Wt. (burned) —OTHER INFORMATION (MOTORS (2) MK 18-C
ALN: R700A-1444-HA-45 GRAINLAUNCHER 105D' ROCKET LAUNCHER

ROCKET PERFORMANCE

Flight Velocity, f/s: striking 1838 Residual —
Fuze functioning FUNCTIONING
Explosive action (High Order) (Low Order) (None)
Distance of burst behind plate —
Condition of recovered round Intact
Head was in (EFFECTIVE) (INEFFECTIVE) condition.

REMARKS: Head & fuze recovered and returned to NPG

Photo No. 10903Signed F.W. KastorffF.W. KASTORFF, E.C.NAVORD, 6-5-51Impact Record # 50

CONFIDENTIAL

IMPACT RECORD

U. S. NAVAL PROVING GROUND
DAHLGREN, VIRGINIAIMPACT NO. 39315IMPACT DATE 10-2-51NPG TEST NO. CODE 10963

OBJECT IMPACT TEST FOR COMPARISON OF FIRING-PIR SFERIMES IN MK 166 ROCKET FUZES
 Reference: NPG Itr. Revolvity 710 9/3/4 dated 8-4-51
 Reference: Board Itr. NOL Itr. NP/NOL XI-1 Ser 01209 dated 7-9-51
 Task Assignment No. NPG - Rec'd - 12-1-52 dated 8-4-51

PLATE TARGET

Gage 1 1/2" Class STS
 Maker U.S. STEEL
 No. D132640 Group D-526-81C
 Dimensions 88" X 250"

OBLIQUITY 30°PENETRATION COMPLETEThickness at impact 1 1/4"No. of impact on plate 18Dist. from nearest impact 11"Dist. from near edge .65" and 1-100"Impact area 6" X 10"Spall: Front 0 Back 0Dish 1/4" Spur 2"Cracks 0

Punching (thrown) (started)

Back Button (thrown) (started)

Bulge 0Through opening 5" X 5 1/2"ROCKET

HEAD: Cal. 5" Type SEMI-AP
 Mark 2 Mod 2 No 9919 Wt. 48.00
 Maker CSCF + .30
 Lot No. 38
 Filler: Type VERM. Wt. -
 Fuze MK 166-D LOT 8-51 #28
SPECIAL FIRING PIN SPRINGS
 Boosters inert — Primers live
 Wt. of head (as fired) 48.00*

MOTOR: Cal. 5" Mk. 2 Mod 3
 Motor temp. 120° RT 89.30

COMPLETE ROUND: Mark Mod
 Wt. (as fired) 137.30*
 Wt. (burned) -

OTHER INFORMATION MOTORS(2) GRAIN
 ALN: 2MDA-1444-HA-45
 " 1411-"
 LAUNCHER 1050' ROCKET LAUNCHER

ROCKET PERFORMANCE

Flight 01411 Velocity, f/s: Striking 1868 Residual -
 Fuze functioning 0
 Explosive action (High Order) (Low Order) (None)
 Distance of burst behind plate -
 Condition of recovered round Intact
 Head was in (EFFECTIVE) (INEFFECTIVE) condition.

REMARKS: Head & fuze recovered and returned to NOL.

Photo No. -

Signed F.W. Kastor
F.W. KASTOR, S.I.
DRD. ENE. 4-5-12

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Security information, Impact Record # 51

IMPACT RECORD

U. S. NAVAL PROVING GROUND
DAHLGREN, VIRGINIAIMPACT NO. 39316IMPACT DATE 10-2-51NPG TEST NO CODE 10963OBJECT IMPACT TEST FOR COMPARISON OF FIRING PIN SPRINGS IN MK 166 ROCKET FUZES

Reference: NPG Itr. Report 714. 9. 34

dated

Reference: Board Itr. NAL Itr. - NP/NAL/XI-1/SOR 012C9

dated

Task Assignment No. NPG-R26b-127-1-2dated 8-4-51

PLATE TARGET

Gage 1.50 Class S15
 Maker U.S. STEEL
 No. 0132640 Group U-526-S10
 Dimensions 88" X 250"

OBLIQUITY 30°PENETRATION COMPLETEThickness at impact 1.46No. of impact on plate 19Dist. from nearest impact 27"Dist. from near edges .29" and .112"Impact area 5" X 9"Spall: Front 0 Back 0Dish 1/4" Spur .2"Cracks 0

Punching (thrown) (started)

Back Button (thrown) (started)

Bulge 0Through opening 5" X 5 1/2"

HEAD: Cal. 5" Type SEMI-AP
 Mark 2 Mod 9 No 4548 Wt. 48.00#
 Maker CSCA
 Lot No. 38
 Filler: Type VERM, Wt. —
 Fuze MK 166-1 LOT 8-51 #35
CONVENT. FIRING PIN SPRING
 Boosters Inc. Primers live
 Wt. of head (as fired) 48.00#

MOTOR: Cal. 5" Mk. 2 Mod 3
 Motor temp. 120° UT. 88.30

COMPLETE ROUND: Mark Mod
 Wt. (as fired) 126.30#
 Wt. (burned)

OTHER INFORMATION MOTOR S(2) M 12-6
ALN: 61MDA-1444-HA-45

LAUNCHER 1050' ROCKET LAUNCHER

ROCKET PERFORMANCE

Flight MEAN Velocity, f/s: striking 1637 Residual —

Fuze functioning

Explosive action (High Order) (Low Order) (None)

Distance of burst behind plate

Condition of recovered round

Intact Head was in (EFFECTIVE) (~~EFFECTIVE~~) condition.

REMARKS: Head & fuze recovered & returned to NOL.

Photo No. —

Signed F.W. KASPER
F.W. KASPER, JR.
OPC. ENG. 65-12

CONFIDENTIAL
SECURITY INFORMATION

Impact Record # 52

IMPACT RECORD

U. S. NAVAL PROVING GROUND
DAHLGREN, VIRGINIAIMPACT NO. 39317IMPACT DATE 10-3-51NPG TEST NO. CODE 10963OBJECT IMPACT TEST FOR PENETRATING POWER OF FIRING PIN IN PLATE IN DPK 166-0 ROCKET FUZE'SReference: NPG ltr. 7-9-51 dated
Reference: BuOrd ltr. 11/14 - NPMOL XI-1/50-01209 dated 7-9-51
Task Assignment No. NPG - Reel 12 - 1-52 dated 8-4-51PLATE TARGETGage 1.50 Class STS
Maker U.S. STEEL
No. 1132640 Group DS-26-810
Dimensions 88" X 250"OBLIQUITY 30°PENETRATION COMPLETEThickness at impact 1.46No. of impact on plate 20Dist. from nearest impact 93"Dist. from near edge 16" and 1-45"Impact area 6" X 9"Spall: Front 0 Back 0Dish 1/4" Spur 2"Cracks 0

Punching (thrown) (started)

Back Button (thrown) (started)

Bulge 0Through opening 5" X 5 1/2"ROCKETHEAD: Cal. 5" Type SEMI-AP
Mark 2 Mod 2 No. 3916 Wt. 48.00#
Maker CSPH ± .30
Lot No. 38
Filler: Type VERITH. Wt. -
Fuzes DPK-166-0 LOT 8-51 #29
SPECIAL FIRING PIN SEE 10-4
Boosters Inert - Primed live
Wt. of head (as fired) 49.00#MOTOR: Cal. 5" Mk. 2 Mod 2
Motor temp. 120° IT. 88.35#COMPLETE ROUND: Mark Mod
Wt. (as fired) 136.35#
Wt. (burned) -OTHER INFORMATION MOTORS(2) NO. 18-0
FLY: R711B-2-6-H-45LAUNCHER 1050' DCKET LAUNCHER

ROCKET PERFORMANCE

Flight 1 Velocity, f/s: Striking 1611 Residual -
Fuze functioning -
Explosive action (High Order) (Low Order) (None)
Distance of burst behind plate -
Condition of recovered round Intact
Head was in (EFFECTIVE) (INACTIVE) condition.

REMARKS: Head & fuze recovered and returned to NOL

Photo No. -Signed F.W. Rasdon
F.W. RASDON, R.L.
C.C. E.P.R. 6-5-52

CONFIDENTIAL Impact Record # 53

IMPACT RECORD

U. S. NAVAL PROVING GROUND
DAHLGREN, VIRGINIAIMPACT NO. 39318IMPACT DATE 10-3-51NPG TEST NO. Code 10923

OBJECT

FLYING FLAME IN MR 166-0 ROCKET FUZESReference: NPG ITR. 10923-1 dated 8-4-51Reference: BuOrd ITR. NJL ITR-NP/NOR/XI-1/51-01209 dated 7-9-51Task Assignment No. NPG - 8023-12-1-52 dated 8-4-51

PLATE TARGET

Gage 1.50 Class STS
 Maker U.S. STEEL
 No. 0132640 Group U.S.-26-810
 Dimensions 88" X 250"

OBLIQUITY 30°PENETRATION COMPLETEThickness at impact 1.46No. of impact on plate 51Dist. from nearest impact 17"Dist. from near edges 10" and 138"Impact area 6" X 14"Spall: Front 0 Back 0Dish 1/4" Spur 2"Cracks 0Punching (thrown) (started) 0Back Button (thrown) (started) 0Bulge 0Through opening 5" X 5 1/2"

ROCKET

HEAD: Cal. 5" Type SEMI-AP
 Mark 2 Mod 2 No 9000 Wt. 48.00
 Maker 254 t. 1.30
 Lot No. 38
 Filler: Type VERTI, Wt. -
 Fuze MR 166-0 LCT 9-51 #30
SPECIAL FLAME 100% Firing
 Boosters None Primer live
 Wt. of head (as fired) 48.00

MOTOR: Cal. 5" Mk. 2 Mod 2
 Motor temp. 120° U.T. 88.45°

COMPLETE ROUND: Mark Mod
 Wt. (as fired) 132.45
 Wt. (burned) 0

OTHER INFORMATION MOTORS (2) GRAIN
HLV: 1050-1404-H5-46
" - 216-14 - 46

LAUNCHER 1050' ROCKET LAUNCHER

ROCKET PERFORMANCE

Flight 1700 ft Velocity, f/s: striking 1756 Residual 0Fuze functioning 0

Explosive action (High Order) (Low Order) (None)

Distance of burst behind plate 0Condition of recovered round 0Head was in (EFFECTIVE) (Ineffective) condition.

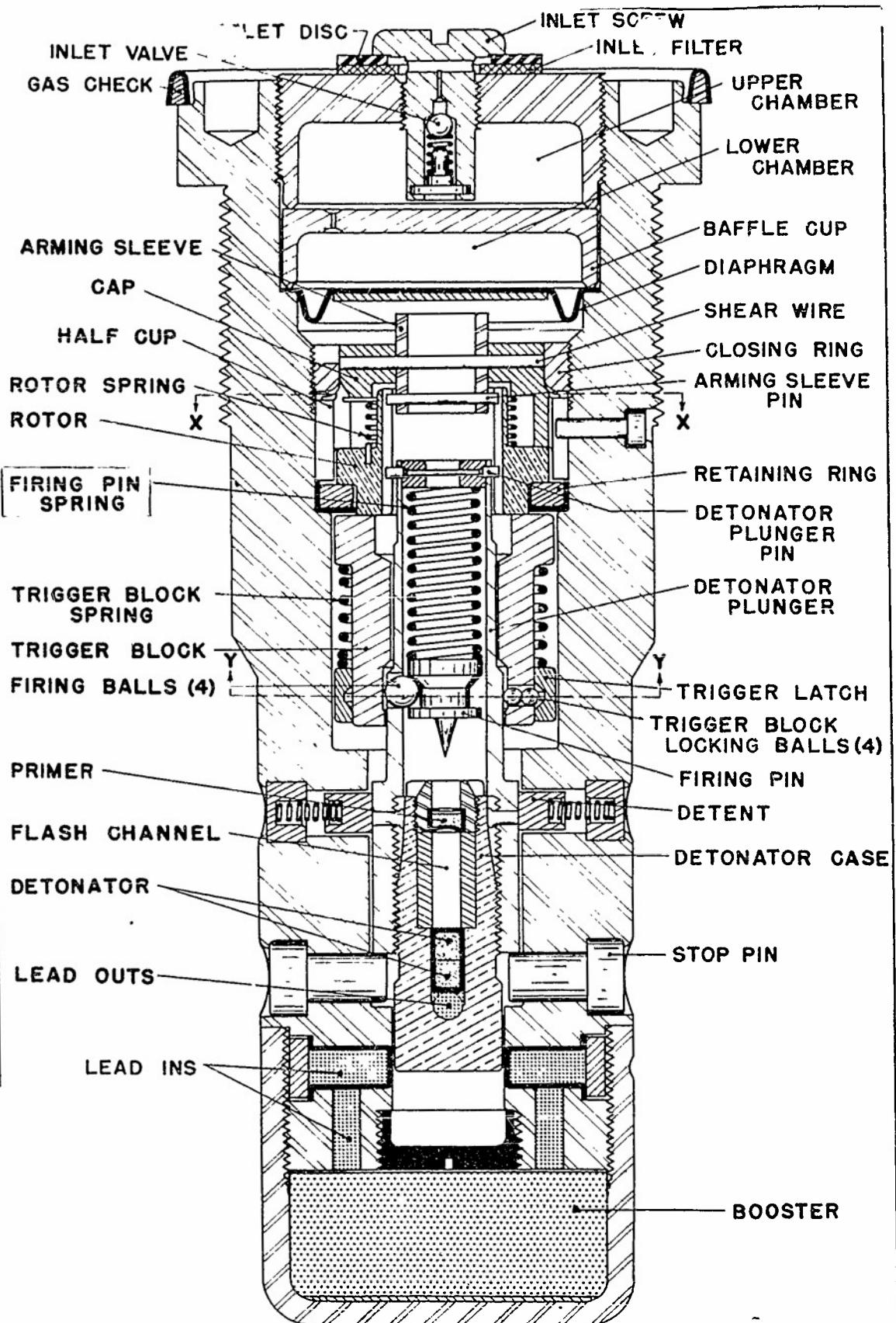
REMARKS: Head & fuze recovered and returned to No.

Photo No. 10923

Signed F.W. Koenig
F.W. Koenig, Ed.
C.R.D. Eng., 6-5-17.

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NP9 47029

FIG. I MK.166 MOD.0 ROCKET BASE FUZE

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NPG REPORT NO. 934

Rocket Fuze Mk 166, Comparison of Firing Pin Spring

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Rocket Fuze Mk 166, Comparison of Firing Pin Springs

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